

# THE IRON AGE

New York, Thursday, April 28, 1910.

## The Humphrey Wire Drawing Machine.

**Its Special Features Are Its Friction Clutch, Die Threading Device, Wire Block Construction and the Provisions for the Safety of the Operator.**

The Humphrey wire drawing machine, which has been perfected by Humphrey & Sons, Joliet, Ill., has been in successful operation for the past three years in several of the important wire works of the country. It embodies improvements by which the workman can obtain a larger daily production from each block, while each workman can keep a larger number of blocks in operation on the same product. There is a saving in scrap and "shorts," owing to the high efficiency of

they have not been of sufficient strength to draw the heavy sizes of wire. They have had a too intricate construction or the wear has been excessive and replacements an expensive item. In the Humphrey friction the manufacturers have had in mind, first, the necessity of a friction that would permit of the starting of the wire steadily though slowly; that would have sufficient strength to pull the wire without trouble and in which the parts were so cheaply constructed as to

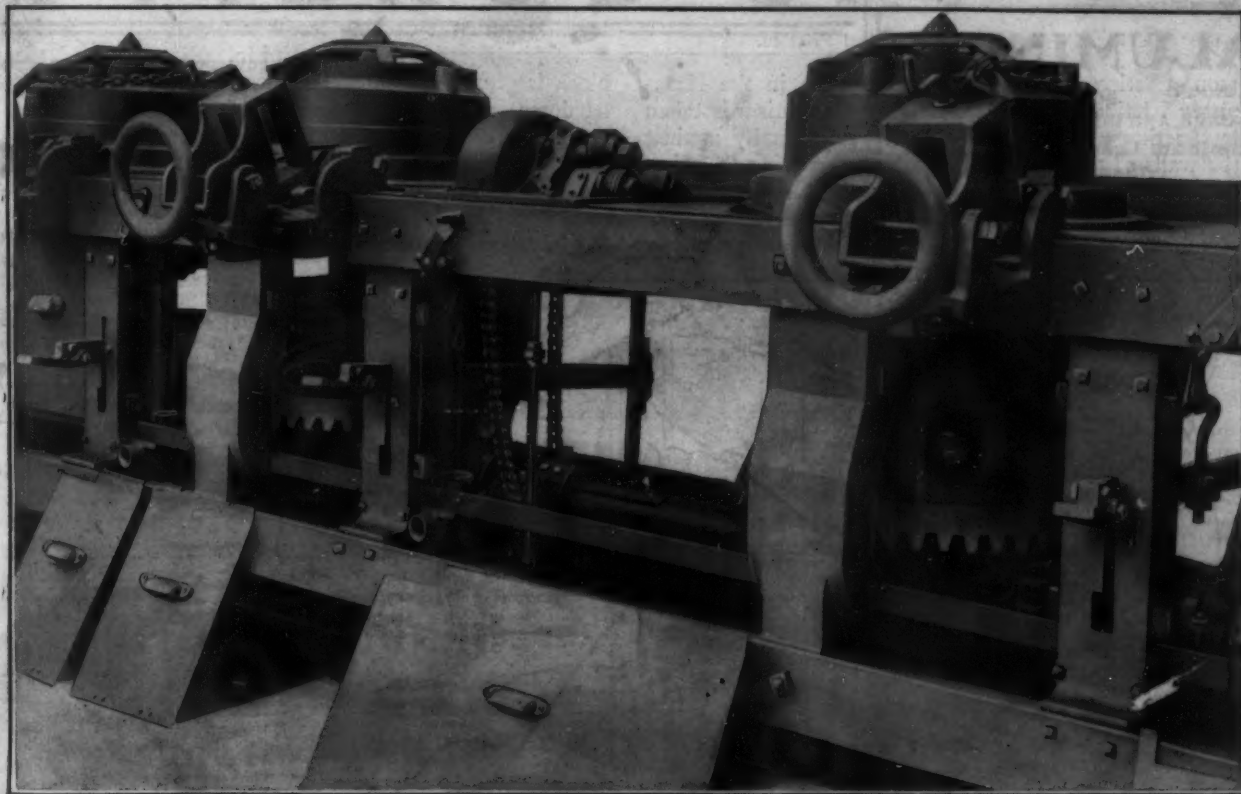


Fig. 1.—The Humphrey Improved Wire Drawing Bench.

the mechanism, and the safety devices have made possible an unusual record in wire drawing, namely, that in one plant in a year's operations not a workman has been injured. In the description that follows the advantages of the friction clutch, the die threading device, the Humphrey wire block construction and the shield ring provided in front of the die as a protection to workmen, and of other mechanical features of the machine are given in some detail:

The wire drawing bench of 50 years ago and that in use in many mills to-day are practically identical in mechanical construction, differing chiefly in the materials used. Up to a few years ago the wire drawer demanded a wood constructed frame, claiming that the wood in the lateral and cross sections gave a cushion to the impact when threading the die, and also when starting the wire, to such an extent that it relieved in part the pulling out of the die and the breaking of the teeth of the pinion and spindle gears. Various frictions have been in use in the industry but generally

admit of replacements if necessary, such replacements to be taken from a stock room and preferably parts cast in a chill or with a minimum amount of finish.

The slow start of the wire through the die carries with it a number of advantages. The life of the hole, which is an important factor, is lengthened from 33 1-3 per cent. to 100 per cent., it is claimed. A large percentage of the repairs is also eliminated. A No. 5 rod in its first draft requires 16 to 20 hp., which is suddenly brought into action through the medium of a pair of tooth gears without any means of cushion. In contrast is the effect on the whole mechanism resulting from the easy and steady movement of a practical friction, which will allow slipping at will. There is also the question of power. To thread a die by the ordinary plan a mechanism is employed that requires from 8 to 10 hp. for an eight-block frame, or a horsepower to a block, at a cost of \$30 to \$50 a year per block. Further, in the Humphrey drawing mechanism each block is a unit. With a rotating line shaft, cutting the

bench on each side gives a complete wire mill as far as the drawing mechanism is concerned. In the older type of machines each block is dependent upon the threading mechanism in use in the mill.

In operating an old-time clutch block the chipping of the lugs when they become worn oblique is a com-

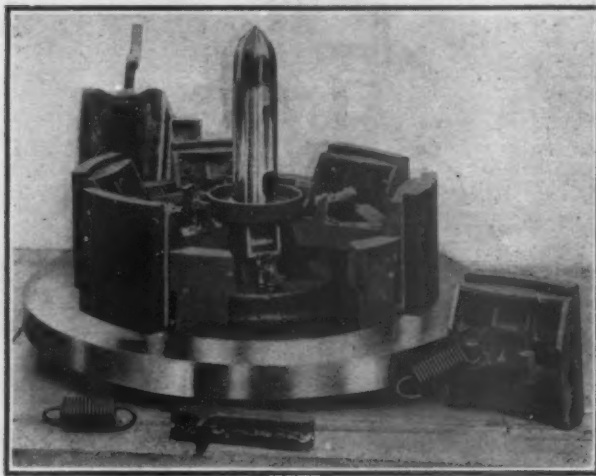


Fig. 2.—Humphrey Mechanical Friction.

mon practice. This is done away with in the Humphrey friction block, as the driving mechanism is taken by friction plates exerting pressure internally against the walls of the block at the point of drawing the wire. Poorly cleaned or baked rods or short rods at times result from errors in various processes. The ordinary clutch block will not draw this inferior stock owing

tion of the latter is briefly this: A plate 30 in. in diameter is keyed to an upright shaft which is known as a spindle shaft, this shaft being driven as in ordinary practice by a pair of bevel gears. On the driving plate are cast six projecting lugs which act as dogs or drivers to the six friction contact plates, one of which is shown in Fig. 2, removed from the driving plate. On the back of this frictional plate is a half-round recess between two projecting lugs. On one lug is a coiled extension spring. The object of these lugs and springs is to connect the various friction plates with one another so that when the six plates are raised above the center the springs will tend to collapse them, making the diameter  $\frac{1}{8}$  in. less than the interior diameter of the drawing block. At the center of the cast plate is a half-round recess which forms the opposite fulcrum for the toggle lying in the foreground which forms the connection between the friction plate and the hub of the driving spider. The recessed casting at the shaft center abuts against a six-sided cone. This when raised throws the arms outwardly, which in turn will take any loss of diameter caused by the wear on the friction material. In practice it is found that this wear is very minute. Each friction plate is driven at its outer diameter by the upright lugs that are cast integrally with the driving member.

Referring to Fig. 3, the initial adjustment of the block is given in detail as follows: The cone *c* is first let down on the spider *s* as shown in the view given at A. Then the block *b* and the ring *r* are let down on the spider *s* as shown in the view at B. Then the hand nut *n* is turned to the right as far as it will go (in the third operation it is best to lift off the block *b*). Next the foot lever is pushed down. If the plate *p* does not now stand at its extreme upper position, as in the views given at C and D, the nuts under the foot lever should be adjusted until it does. This will leave a small space between the block *b* and the top of the plate *p*, which is very necessary. Finally the foot lever is pushed down and the hand nut *n* is turned to the right a small fraction of a turn. If the foot lever is now let up and the block fails to draw the wire the nut *n* should be turned a little more until it does. The arrow in the view D points to the lugs that should be in contact when the block is in its extreme upper position.

To operate this friction a ring is provided under the surface of the block that lifts the six friction members at the same time that it lifts the block.

As soon as the friction plates rise above a given center the springs act and collapse the friction members, permitting the block to stand stationary. To start the block the lower starting ring is lowered by means of a treadle or compressed air. The top of the inside bore of the block is lowered to the top of the friction plates, straightening the toggles, at the same time lengthening

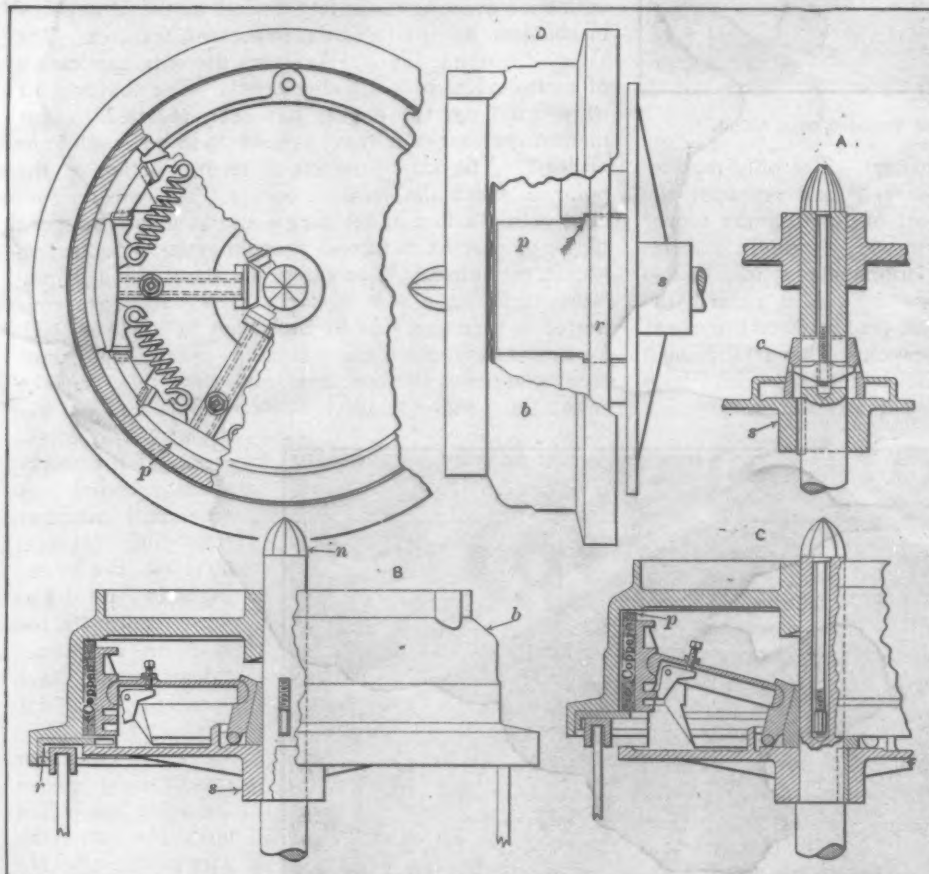


Fig. 3.—Details of the Mechanical Friction Wire Block.

to the sudden pull of the clutch block when die threading. Such wire, which has its uses, can be successfully drawn by the use of the Humphrey friction block.

#### The Wire Block.

Fig. 1 is a view of the drawing bench, while Figs. 2 and 3 give details of the wire block. The construc-

the arms so that the entire structure becomes a solid wheel readily adjusted for power by the conical nut at the top of the spindle shaft.

It is not unusual in wire mills for 3 to 5 ft. of wire to be scrapped on every bundle drawn in a mill owing to the imperfections made by the nippers in threading the die. The scrap made by the Humphrey machine is about an inch that is contained in the nipper dies. In reference to the threading attachment it is stated that the Humphrey nipper is readily repaired and

pass from block to block more readily than if the wires lay diagonally across the floor of the reel. It also allows ready access to the Humphrey continuous roll pointer, Fig. 4 (which shows the stand type) driven by heavy high grade automobile chain direct from the

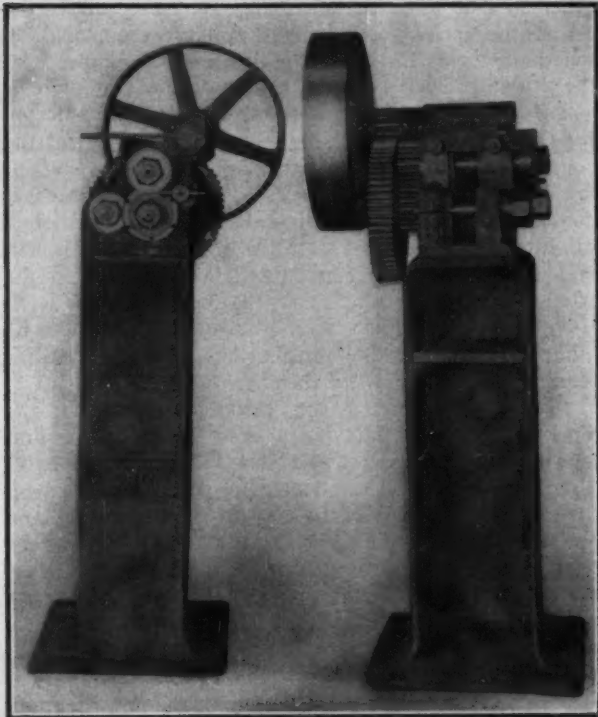


Fig. 4.—Humphrey Pointer Mounted on a Stand.

the frame is practically permanent. The only replacement necessary would be to recut and retemper the jaws at a fraction of the cost of refitting the nipper in ordinary practice. Drawing in a straight line instead of at an angle, as in ordinary practice, is also emphasized, since this brings the strain against the front of the bench and does not tend to distort or shear the holding bolts of the framework. This arrangement offers two other advantages: It interferes less with the stripping of the block and allows the workmen to

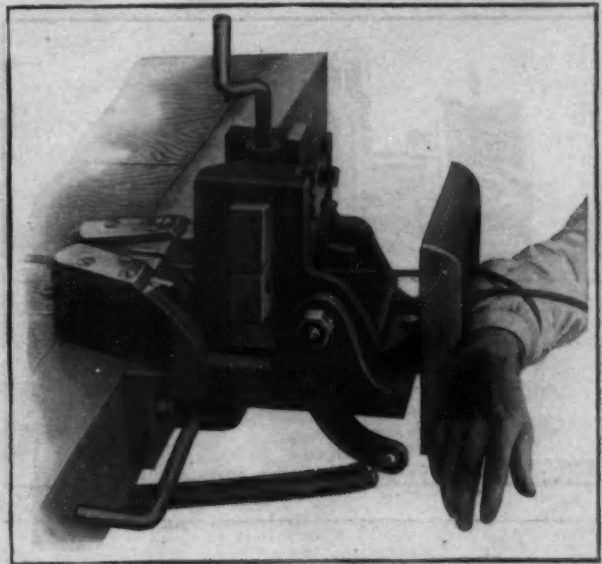


Fig. 5.—Safety Die Stand.

line shaft. This pointer makes a point with a true taper free from objectionable shoulders.

#### Safety Devices.

In view of the liability to accident in connection with wire drawing the safety devices of the Humphrey mechanism are particularly important features. The safety die stand, Fig. 5, represents the only application of such devices to a drawing bench. The shutting off of steam from the engine has been resorted to, but momentum carries a heavy engine 20 to 30 revolutions at least. The safety die stand secures action at the point at which the accident occurs. The wire is severed within a foot of the tangle and at a rate of speed of 1-134 part of a second providing the wire travels 500 ft. per minute. The safety die stand has a framework inclosing a pair of taper jaws which are connected in turn to a ring by the means of a bar of steel. In action any obstruction coming against the guard ring compresses the two taper jaws until they grip the wire; the faster the block revolves the more quickly

the wire will be severed and the workman released. A wire mill manager employing several hundred men engaged in wire drawing reports three cases in which accidents would have occurred but for this safety die stand. One man was caught above the ankle and pulled up to the stand, the wire cutting off. He kept on working and required no medical attention. Another man was caught around the arm, but owing to the safety die stand was uninjured, and he also kept at work. A third man

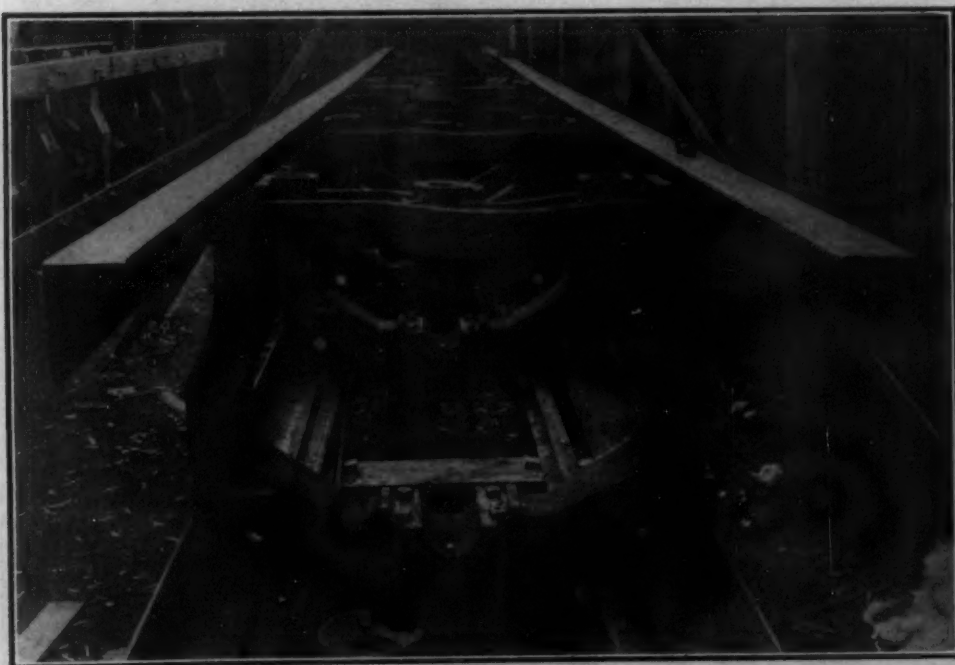


Fig. 6.—Construction of Framework of Humphrey Bench.



Fig. 7.—Heavy Type of Bench for  $\frac{3}{4}$ -In. Rod, with Air Driven Friction and Bench Driven Pointers.

was caught around the arm, but was not bruised.

It is common practice, moreover, for wire drawers, against orders, to feel the wire as it leaves the die stand to test its smoothness or the condition of the die. A hand leather is a part of the equipment of the old-

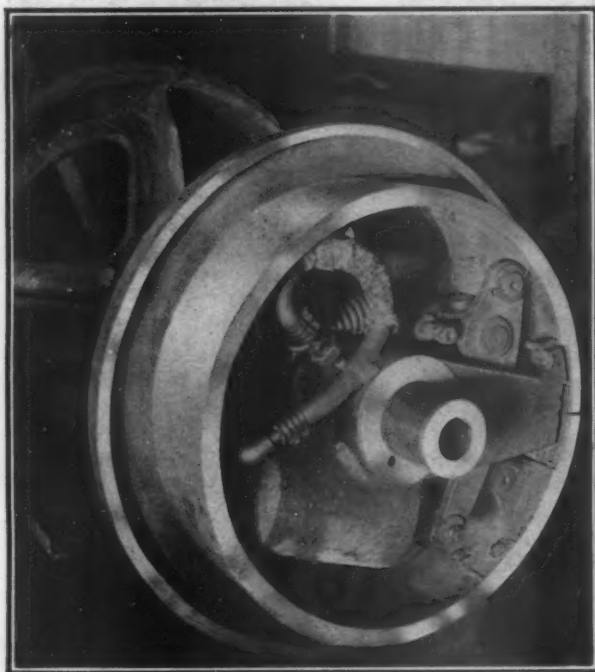


Fig. 8.—Driving Mechanism of the  $\frac{3}{4}$ -In. Air Driven Friction Block.

time drawer. This leather is loose and is easily caught by the wire and drawn into the revolving block, with many chances of fatal results. With the safety die stand, upon which patents are pending, the moment the body of the operator is drawn against the bench the jaws of the die stand engage the wire and the danger is eliminated by the severing of the strand.

Another safety feature is the stopping of the block when a tangle occurs at the reel. When rods are received from the rolling mill they are delivered to a rod car in a red hot state. As they are lowered to the rod car water is poured on them and the kinks in the rod remain until taken out by the process of drawing. In case a reel of rods does not pay out properly and the workman is busily looking after his finishing blocks with his back to the rod reel, the moment the reel has drawn 8 in. to 2 ft. toward the wire bench the block stops automatically by being thrown out of commission with compressed air. In construction a cylinder is placed back of the treadle guide. Should the block be stopped by the operator or by a tangle the air is admitted to the top of this cylinder, which in turn forces the piston downward and the treadle engages in a notch formed in the treadle plate. Here a notch of

ordinary practice is supplemented by a spring to hold the treadle in its place, and in addition compressed air on the top of the piston, making it impossible for the block to start without the workman's assistance. To re-start the block after a tangle the workman first disentangles the rods, drags the reel back to its original position, throws the air valve, turning off the compressed air, and starts his block slowly by raising the treadle as fast or slow as his work may require, but not instantly.

The Humphrey bench is made practically self-oiling, or as nearly so as is possible in this class of machinery. The materials used are soft steel, steel castings, manganese bronze, genuine babbit, high-speed steel and charcoal iron. Care is taken that the various moving parts are provided with a factor of 75 per cent. of overload; the gears are cast from machine planed patterns. The main line shaft gear is split and held together by four  $1\frac{1}{4}$ -in. bolts with double nuts, and all keys are locked to prevent their movement on the shaft. The rigidity furnished by the block frame, Fig. 6, is worthy of mention. The distance between blocks is varied by moving the block unit in its position on the longitudinal angles which form the skeleton framework.

With the friction clutch it has been found practicable to draw larger sizes of wire than are possible with the positive clutch. A heavy type of bench (Fig.



Fig. 9.—Humphrey Baking Ovens.

7) has been designed for this work, with a clutch thrown in as well as out by compressed air, the tension on the drum being too heavy for the operator to use a foot lever. The driving mechanism is shown in Fig. 8. In case a wire breaks or runs out the block on which it is drawing stops automatically without interfering with other blocks in the same bench, so that one man can take care of as many blocks as he can strip and keep the dies threaded, the threading only taking a fraction of the time required on old-style machines.

As is well known, the cleaning of wire rods involves first their immersion in acid, after which they are dipped in water, allowed to brown coat, and are then dipped in hot lime which tends to neutralize the remaining acid. In the wet state the rods are placed in a baker where the lime is baked on the rod. Commonly the rods are pushed into the oven on trucks, the doors are closed and the evaporation of the hot lime proceeds. In the Humphrey baker, Fig. 9, the acid and other fumes are drawn out of the oven as soon as the truck enters the alley, through the creation of a natural draft of superheated air. This eliminates the acid, as is often not effectively done in a tightly closed hot room, and increases the efficiency of the baker both as to speed and as to baking qualities. The doors are counterweighted and when closed are self-seating against the jambs. Each alley is partitioned from its neighbor and provision is made to discharge the trucks easily without the necessity of the workmen entering the baker.

Only within recent years has machinery been used in the cleaning room of wire mills for the handling of the entire product. At first common labor was employed to get the rods in and out of the cleaning vat, sometimes by hand and again with the use of a sweep. Later hydraulic cranes were introduced. The Humphrey steam driven crane, Fig. 10, using steam at boiler pressure, eliminates the loss of conversion; that is, steam drives the crane direct instead of being used in an engine which in turn operates the pumps of the hydraulic system. Further, the loss in leakage is a consideration in the use of the hydraulic crane. The Humphrey crane employs a balanced valve and provision is made against the blowing out of cylinder heads in case of flooding. Top and bottom bearings are both ball and roller, running in oil. The crane framework is heavy section steel. In view of the corrosion to be expected in a cleaning room there has been objection to the use of steel, but with the heavy sections as shown the effect of corrosion is very slight. The operator of this crane grasps the handle below the vertical pipe with the left hand and with the right hand grasps a valve lever at right angles to the pipe just above the handle, but not clearly brought out in the cut. The movement of this lever to or from the operator raises or lowers the load. The capacity of this crane ranges from 1000 lb. to 5000 lb. lift.

The McCall Incinerator Company, Nashville, Tenn., has opened a branch office in New York City, which

will be in charge of Dr. Thomas Darlington, formerly Commissioner of Health for New York, and Martin Maas. The offices are located at the corner of Broadway and Pearl street. A branch office has also been opened in the Evans Building, Washington, D. C., which will be in charge of Henry B. F. Macfarland, formerly Commissioner for the District of Columbia.

#### A Large Motor Car Company at Lansing, Mich.

The Clark Power Wagon Company, Lansing, Mich., a consolidation of the business of Clark & Co. and the Ferguson Motor Company, has been incorporated with capital stock of \$500,000. In addition to the plant now occupied by Clark & Co., which is 132 x 150 ft., with an available floor space of 90,500 sq. ft., the company also owns 150 x 398 ft. on River



Fig. 10.—Humphrey Steam Driven Cleaning Crane.

street, adjoining the factory, which will be utilized in the near future for new buildings. A machine shop, 65 x 300 ft., three stories, which will furnish an additional floor space of 58,500 sq. ft., will be erected.

The company will begin operations with an output of 15 motor cars per day, but the additions to be made will increase the factory capacity to 30 per day for the season of 1912. Frank G. Clark, who owned all the stock in Clark & Co., is president of the new company, and will retain control. R. A. Radle, formerly connected with the Indianapolis Motor Car Company, the Rapid Vehicle Company and the Branowsky Power Wagon Company, will be factory manager, secretary and treasurer of the company.

The Sharon Fire Brick Works, Sharon, Pa., has the contract for fire brick required in relining Claire Furnace of M. A. Hanna & Co., at Sharpsville, Pa. This and other contracts enable it to operate its plant full capacity. The Sharon Boiler Works, builder of Wheeler water tube boilers, plate construction, &c., is furnishing a 300-ton Mullin gas washer for the same furnace.

## Customs Decisions.

## Fishhooks.

The United States Board of General Appraisers partially sustained a claim filed by the American Express Company and R. Ogilvy regarding the classification of fish hooks made from round iron or steel wire. The collector assessed the hooks at the rate of 40 per cent. ad valorem and 1¼ cents, whereas the importers set up the contention that, as the merchandise is not valued at more than 4 cents a pound, the duty should be at the specific rates provided in the proper paragraph, plus 1¼ cents a pound prescribed in the second proviso of paragraph 137 of the tariff.

## Nickel Coated Wire.

The board has handed down a decision regarding the classification of coated wire imported by Hermann Boker & Co., New York, favorable to the contention of the importers. The merchandise consists of wire composed of iron and nickel. It is produced by forcing an iron core into a nickel tube and then drawing the combined article down to the required size. Duty was assessed at the rate of 45 per cent. under the provisions of paragraph 137, act of 1897, as iron or steel wire not specially provided for, whether covered or uncovered with metal. The importers' claim is that the wire should be allowed to enter under the same paragraph as assessed, but as iron or steel wire "coated" with metal at the appropriate rate provided for the wire from which the article is made with two-tenths of a cent per pound in addition.

General Appraiser Fischer, who writes the decision, says that the classification of this wire, not coated with a nickel deposit by galvanizing, dipping or some similar method, but covered with an outer surfacing of nickel welded thereto, turns upon the latitude taken in the final clause in paragraph 137. The general appraiser reaches the conclusion that the interpretation to be given the final clause of the paragraph is of a character to warrant sustaining the contention of the importers for the imposition of the lower duty. The collector is ordered to make a reliquidation at the lower rate of duty.

## Solder Ash.

The board has refused to reverse the classification made by Collector Loeb on importations of solder ash, a dross composed of tin and lead. Upon analysis the merchandise was shown to contain 46.40 per cent. of lead. Duty was assessed at the rate of 2½ cents a pound as "lead dross," whereas B. Lissberger & Co., the importers, claimed the article dutiable either directly or by similitude to lead-bearing ores at the rate of 1½ cents per pound on the lead content, or at the same rate either directly or by similitude to type-metal. General Appraiser Fischer, who writes the decision, says that he is unable to sustain either of the contentions raised by the importers for rates of duty lower than those assessed. The decision says that the article is a dross from melted metal, and that the claim that it is an "ore" is without merit. The General Appraiser also denies the allegation that the commodity is dutiable by similitude to type-metal.

The Pittsburgh Testing Laboratory, with general offices at 325 Water street, Pittsburgh, Pa., announces that on account of the rapid growth in its cement testing department, it has opened cement laboratories, with full facilities, in charge of competent cement chemists and cement testers, at 511 Omaha Building, Chicago, and 309-310 Praetorian Building, Dallas, Texas. It also has cement laboratories at Easton, Pa.; Pittsburgh, Cincinnati, Birmingham, and San Francisco, as well as cement chemists located at a large number of the different cement mills. It is prepared to test cement in its laboratories, or to make mill inspection of cement at any of the leading cement mills.

## Heroult Electric Furnace Installations.

R. H. Wolff of New York, American representative of the Heroult electric furnace and process, has closed with the Crucible Steel Company of America for the installation of two Heroult furnaces. One of 5 tons capacity is now under construction at the Atha Works, Harrison, N. J., while another of the same capacity will be put down at the Park Works, Pittsburgh. Plans are now under way for the installation of a number of additional Heroult furnaces of large size, including 15 and 20 ton furnaces for a large steel works in England. The further introduction of this furnace has made rapid progress in England in the past six months. Below is given a list of the Heroult licenses in Europe, the United States and Mexico, there being a total of 44 furnaces in operation or under construction:

## Europe.

Works of August Thyssen: Deutscher Kaiser Stahlwerke, Bruchhausen, Germany; Deutscher Kaiser Stahlwerke, Muhlheim, Germany.  
Stahlwerke Richard Lindenberg, Remscheid-Hasten, Germany.  
Bismarckhütte, Upper Silesia, Germany.  
Mannesmann-Röhren Werke, Saarbrücken, Burbach, Germany.  
Kaerathner Eisen & Stahl Werke, Austria.  
Gebr. Böhler & Cie., A. G. Kapfenberg, Austria.  
Georg Fischer, Schaffhausen, Switzerland.  
Soc. Electromet. Française, La Paz, Savoy, France.  
Acieries du Saut du Tarn, St. Juery, France.  
Aktiebolaget Heroult's Elektriska Stal, Korfors, Sweden.  
Societa Tubi Mannesmann, Dalmine, Italy.  
Brüder Lapp Rottenmann, works Steiermark, Austria.  
Imperial Steel Works, Obuchow, St. Petersburg, Russia.  
Usine Metallurgique de la Basse Loire, Trignac, France.  
Soc. des Usines Metallurgiques du Hainaut, Couillet, Belgique.  
Edgar Allen & Co., Sheffield, England.  
Thos. Firth & Sons, Ltd., Sheffield, England.  
Skinningrove Iron Company, Ltd., works Carlin How, Yorkshire, England.  
Vickers Sons & Maxim, Ltd., works Sheffield, Barrow, Birmingham, England.

## United States.

United States Steel Corporation.  
Halcomb Steel Company, Syracuse, N. Y.  
Firth-Sterling Steel Company, McKeesport, Pa.  
Crucible Steel Company of America, Pittsburgh, Pa.

## Mexico.

Cia. Mexicana de Acero y Productos Químicos, Mexico.

Another Russian installation is also practically under contract. At the Skinningrove Iron Company's plant the Heroult furnace will be used, as at South Chicago, for the refining of rail steel.

## Koppers By-Product Ovens at Wylam.

With the 280 Koppers by-product coke ovens which the Tennessee Coal, Iron & Railroad Company is about to build at Wylam, near Ensley, Ala., the United States Steel Corporation will have a total of 1120 Koppers ovens. The first of this type built in the United States were the 280 for the Illinois Steel Company's Joliet, Ill., blast furnaces, these being erected in 1907. In addition, 560 are now under construction at Gary, Ind. The new ovens to be built at Wylam, Ala., will be 37 ft. long between doors, 9 ft. 10¾ in. high, and will have an average width of 19¾ in. Each oven will produce 11.25 tons of coke every 24 hours. With a coal containing 30 per cent. of volatile matter, the daily output of the plant will be 3145 tons of coke, besides 22,000,000 cu. ft. of 500 B.T.U. gas, 35,000 gal. of tar and 44 tons of sulphate of ammonia. The ammonia will be recovered from the gas by the Koppers direct process.

A block of Koppers by-product ovens is also being installed by the Algoma Steel Company, Sault Ste. Marie, Ont.

It is interesting to note that one important works in Germany is putting in equipment to manufacture soil pipe in iron molds, this being presumably the first installation of the kind in that country.

The Reed Quick Change Feed Lathe.

The engine lathe illustrated in Fig. 1 embodies a quick change feed mechanism by means of which 60 changes of speed of the feed rod and lead screw are obtained. The machine is otherwise of the standard type of its builder, the F. E. Reed Company, Worcester, Mass., but with refinements of design. Of the changes 30 are obtained in the gear box at the front of the bed, which is clearly shown in Fig. 2. On a shaft is mounted a cone of gears, any one of which can be engaged by the movement of the lower lever. The shaft above the cone is in line with and clutches to the lead screw, and carries a double clutch gear operated by a lever, the three positions of which multiplies the 10

	14 in. x 6 ft.	16 in. x 6 ft.	18 in. x 8 ft.	20 in. x 8 ft.
Floor space over all, ft. and in. . . . .	0 x 2 7	0 11 x 2 0	0 0 x 2 11	0 0 x 3 1
Weight, skidded, lb.	1,900	2,300	3,200	3,800
Weight, extra per foot, lb. . . . .	100	125	175	200
Weight, boxed, lb.	2,125	2,800	3,800	4,500
Cubic feet, boxed.	47	64	88	108
Weight extra, taper attachment, lb. . . . .	75	100	150	175
Weight extra, turret attach., lb. . . . .	225	340	500	560
Weight extra, oil pan, lb. . . . .	335	350	450	450
Friction pulleys, diameter and width of belt, in. . . . .	12 x 3	18 x 3 1/2	14 x 3 1/2	16 x 4
Countershaft speed, rev. per min. . . . .	180	100	150	140

All sizes have large spindles and bearings, four-step cones of large diameters for wide belts and are strongly back geared. The three smaller sizes can be equipped with special headstocks for draw-in collet attachments. The 14 and 16 in. machines are made with either compound, elevating or plain rest, and the 18 and 20 in. with either compound or plain rest.

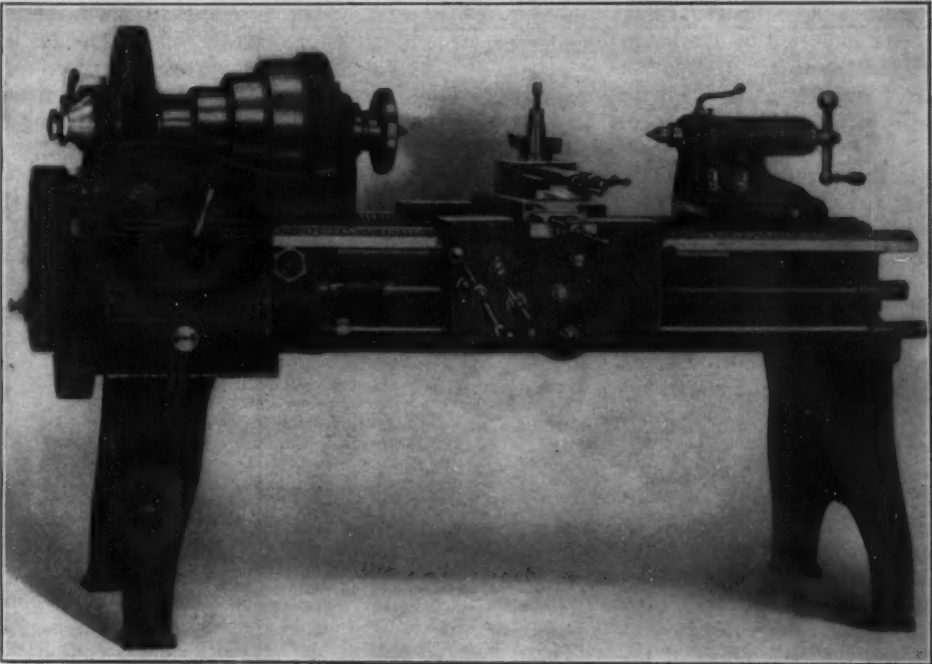


Fig. 1.—A 16-In. Engine Lathe with Quick-Change Feed Gear, Built by the F. E. Reed Company, Worcester, Mass.

changes of the cone to 30. A further multiplication by two is obtained by the sliding gear at the end of the machine, which may be operated while the machine is running. All gears in the case are of bar steel, cut coarse pitch. The range of standard threads is from 2 to 128, including 11 1/2, and of feeds 10 to 640 per inch of travel.

As already stated, the upper shaft of the gear box and the lead screw are engaged by a clutch. Its release, by means of the handle shown at the right of the gear box, brings a gear into mesh with one on the feed rod, the mechanism being so designed that the screw and rod cannot operate the same time. The whole arrangement is such that it is impossible to lock the mechanism and cause damage. This lathe is built in 14, 16, 18 and 20 in. sizes. The dimensions of the various sizes follow:

	14 in. x 6 ft.	16 in. x 6 ft.	18 in. x 8 ft.	20 in. x 8 ft.
Distance between centers, ft. and in. . . . .	3 0	2 7	4 1	3 9
Swing over bed, in. . . . .	16	15	20	22
Swing over plain rest, in. . . . .	10 1/2	11	11 1/2	13
Swing over elevating rest, in. . . . .	8	0	..	..
Swing over compound rest, in. . . . .	10 1/2	11 1/2	12 1/2	14 1/2
Swing over plain taper rest, in. . . . .	9 1/4	10	11	11 1/2
Swing over elevating taper rest, in. . . . .	6 1/2	7 1/2	..	..
Swing over compound taper rest, in. . . . .	9 1/4	10 1/2	12	13 1/2

Lack of Milling Machine Safeguards in England.

What is referred to as the first case of its kind was brought before a Birmingham, England, magistrate recently at the instigation of the chief factory inspector. The Armstrong Triplex Three-speed Gear Company was charged with failing to have the dangerous parts of a milling machine safeguarded, and

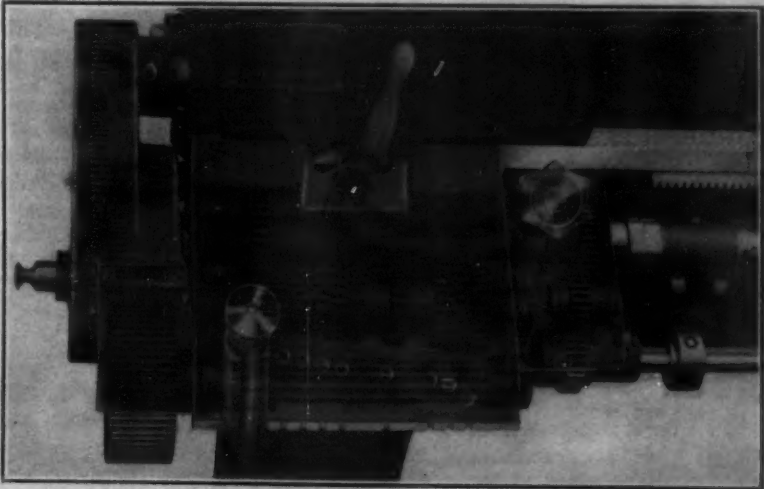


Fig. 2.—Phantom View Showing the Feed Gearing.

a boy had been so seriously injured that his arm and part of his shoulder had been amputated. It was stated that in the years 1906-1908 244 accidents arising from unprotected parts of milling machines had occurred. The defense claimed that the mishap was due to the want of proper caution on the part of the boy. The magistrate fined the defendant £50 and costs.

At Sparrows Point, Md., the first cargo of steel rails was loaded this week, on the Queensland Government Railway's order for 11,000 tons.

## A NEW TILTED TURRET SCREW MACHINE.

**The No. 3 Machine with Friction-Geared Head and Geared Automatic Feed to the Turret Slide.**

An addition to the line of tilted turret screw machines built by the Wood Turret Machine Company, Brazil, Ind., is the No. 3 size ( $1\frac{1}{4}$  in. capacity), with friction-geared head and geared automatic feed to the turret slide. A general view of this machine is given in Fig. 1.

This machine embodies in its design many improvements and new features which are necessary for the

extends to the rear end to a gear box, the gears of which run in a bath of oil.

The details of the geared automatic feed are shown in Fig. 4. The necessary reduction in the speed transmitted by the shaft A is obtained through the four gears B, C, D, and E. Gear B is keyed to the shaft A, while gear C and the three gears mounted on the same shaft with it are secured together, but run free on their shaft. Gears D and E are likewise secured together and run free on their shaft. The power is therefore transmitted from gear B to gear D and from gear E back to gear C. The pull-pin F operates a sliding key, which engages in turn any one of the three gears mounted on the same shaft with the gears D and E, and as these three gears are always in mesh with the three gears on the shaft A, three different rates of feed may be obtained.

In Fig. 5 are shown further details of the geared automatic feed, the position of the gears which are interchanged to double up the number of feeds to give six changes in all, and

the automatic trip for disengaging the automatic feed which operates in conjunction with the independent adjustable stops for each hole of the turret. The automatic feed is transmitted from the spur gear on the pull-pin shaft at F through two spur gears and the shaft G to the gears H and I. The latter are so arranged that they can be instantly interchanged to double the number of feeds, giving six positively driven changes of automatic feed to the turret slide.

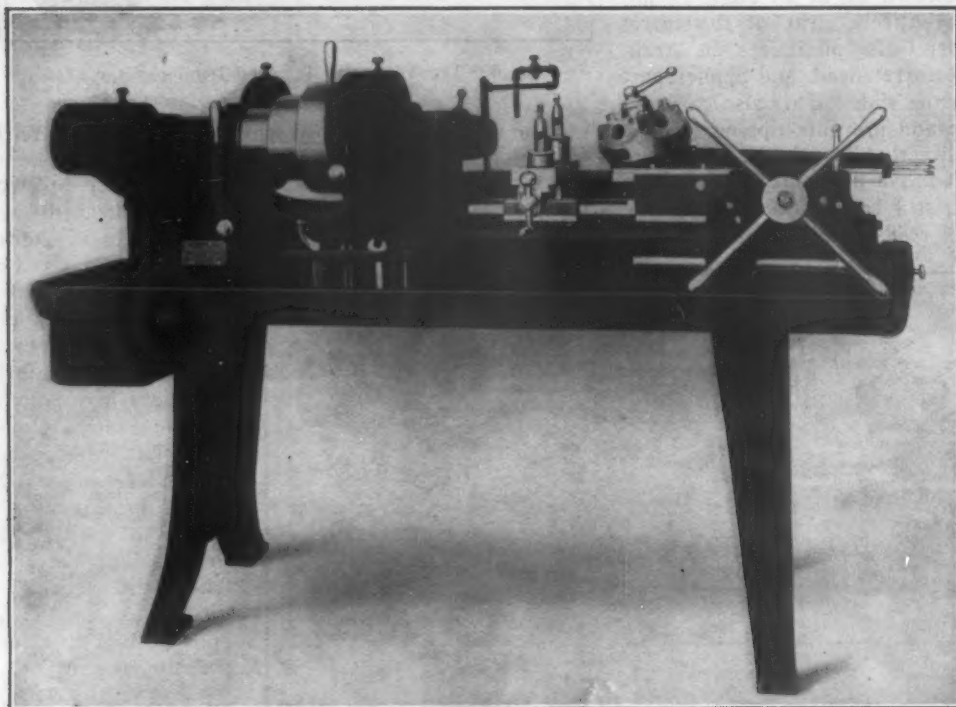


Fig. 1.—The No. 3  $1\frac{1}{4}$ -In. Tilted Turret Screw Machine Built by the Wood Turret Machine Company, Brazil, Ind.

rapid and accurate production of duplicate parts. It will be noticed that head and the lower half of the geared guards are cast solid with the bed, insuring strength and rigidity. The machine is equipped with a friction-geared head and a three-step cone pulley of large diameter and wide face, giving a powerful drive. The friction-geared head gives two spindle speeds for any one speed of the cone, enabling the operator to use two speeds without stopping the machine to throw in the back gears. By moving the handle at the side of the cone to the right or left, the back gears are thrown in or out while the machine is in motion, thus securing the necessary speeds for changing from boring to tapping, and for turning different diameters in the same piece without stopping the machine.

In Fig. 2 the head is shown with the casings removed, revealing the construction and the arrangement of the gearing. This engraving also shows the general layout of the geared automatic feed to the turret slide. As will be noticed, this feed is taken from a sprocket secured to the spindle and is transmitted through a roller chain to a shaft located in the bed of the machine. The fact that this shaft, which transmits the automatic feed to the turret slide is located within the bed of the machine itself, is brought out clearly in Fig. 3. Here may be seen the general design of the rear of the machine, showing the friction-geared head, the oil pump and tank and the feed gear box. The shaft to which the feed is transmitted from the spindle is located in the bed of the machine and

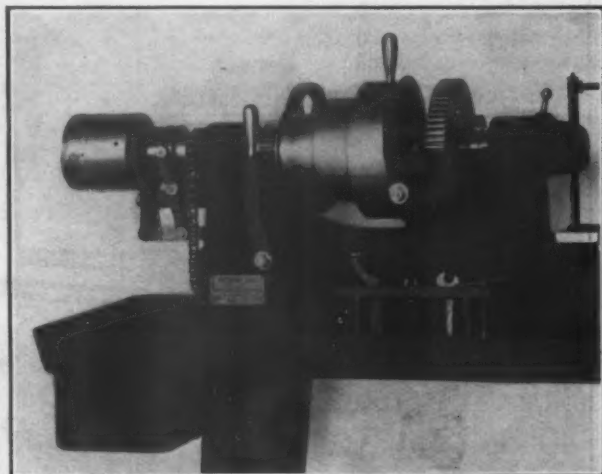


Fig. 2.—The Casings Removed, Showing the Arrangement of the Friction-Geared Head.

On the same shaft with the gear I is a worm meshing with a worm gear. The worm is held in a rocker arm, which throws the worm in and out of mesh with the worm gear by the operation of the lever. The worm is keyed to the same shaft that carries the turnstile. This shaft has mounted on its other end a spur pinion meshing with a rack secured to the under side of the turret slide, resulting in the automatic movement of the turret slide. The small lever J, shown in Fig. 5, passes up through the under side of the turret saddle, and automatically trips or disengages the feed in connection with the independent adjustable stops for each hole of the turret.

As in previous models the tilting of the turret is of advantage, as it makes it possible to use extra large box tools and die heads, as when swung around to the rear position they are thrown up at an angle of approximately 30 degrees, entirely clear of the turret slide. The tilt of the turret also minimizes the strain on the center bolt of the turret head, and applies part of the thrust directly on the slide. This also causes a full bearing on the slide and prevents tipping. Stock may be passed into or directly through the tilted turret, since the center bolt has a hole through it. This allows the use of a short, stiff box tool and avoids the necessity of the box tool rest guide. Thus it is pos-

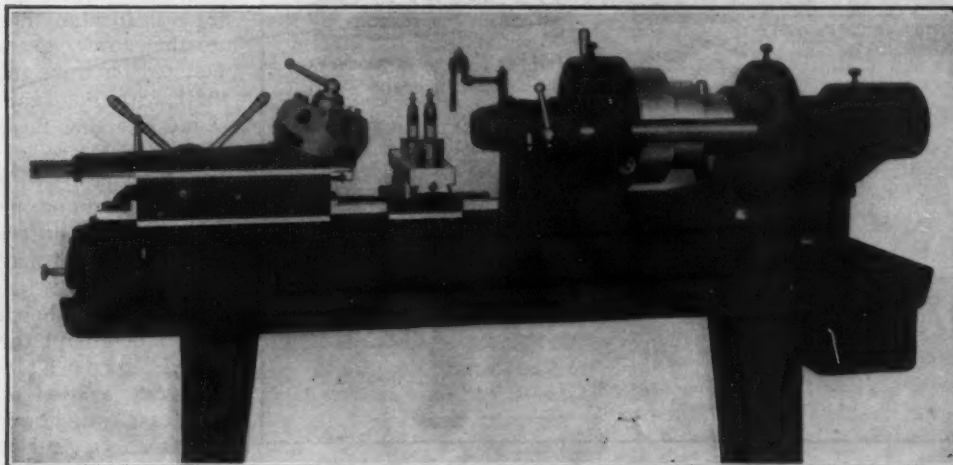


Fig. 3.—Rear View of the Machine.

sible to obtain the benefit of the long effective motion of the slide. The turret also being hexagonal allows the box tool to be bolted to the face, leaving the turret hole open to let the work pass through. Work when machined is passed into or directly through the turret, coming out at the rear through one of the auxiliary holes in the lower half without interfering with a tool in the rear position.

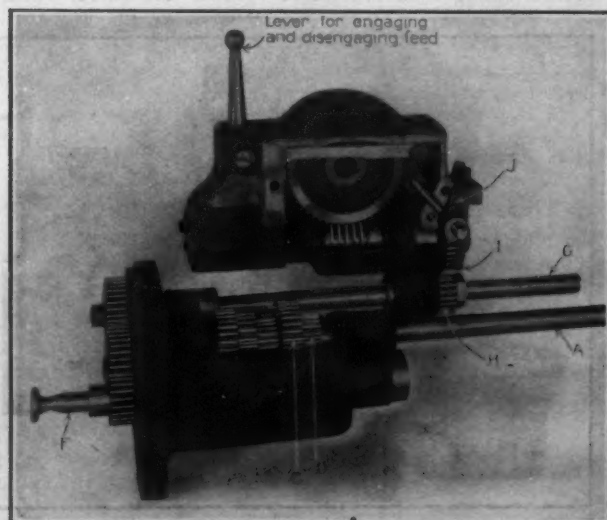


Fig. 4.—Details of the Geared Automatic Feed and Interior of the Box.

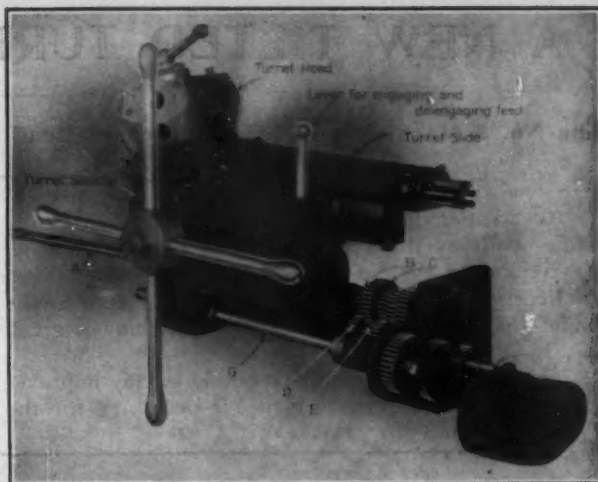


Fig. 5.—The Automatic Trip and Details of the Feed.

The machine is equipped with an automatic bar feed for automatically feeding the stock through the spindle. Four gears and a scroll deliver power to two rollers, while a second scroll is used to fit the adjusting jaws to the stock. Provision has been made on the stock

adjusting jaws to take round, square, hexagon or any other shaped bar stock. The lever on the left of the machine, which operates the automatic bar, also operates the automatic chuck, opening it before the feed is thrown into action, when the lever is thrown to the left, and closing it after the stopping, when the lever is thrown to the right. This one lever controls two operations, and at the same time prevents

trying to roll stock into the machine when it is gripped by the collet.

The turret slide, which rests and moves in the saddle, is furnished with a taper gib fitted the whole length of the saddle on either side, providing means of adjusting the slide sideways. The saddle is gibbed to the outer edges of the bed by flat gibs throughout its entire length. There is a supplementary taper base to the saddle by which the turret holes can be adjusted to the exact height of the center of the spindle. Thus it is never necessary to rebore the turret holes. Automatic stops for each hole in the turret are furnished with the machine and are instantly adjustable to different lengths.

The tilted turret screw machine is sold by Hill, Clarke & Co., Inc.

**Peat Exhibition.**—The New York Section of the American Peat Society will hold an exhibition of peat products, peat machinery, samples of peat, drawings, photographs and anything pertaining to peat, at the rooms of the Chemists' Club, 108 West Fifty-fifth street, New York, May 16 and 17. Contributions of peat samples, peat products, drawings and photographs with full description are solicited. The chairman of the New York Section is Dr. Charles F. McKenna, 50 Church street, New York. On the evening of May 17 Prof. Chas. A. Davis of the United States Geological Survey will read a paper on "Our Peat Bogs a Valuable Asset."

# MODERN METHODS OF SHOP MANAGEMENT.\*

## Details of a System Taken from Actual Practice.

BY FREDERICK A. WALDRON, CONSULTING ENGINEER, NEW YORK.

Producing consists of manufacturing and delivering a complete article of maximum quality in a profitable quantity with reasonable profit at lowest cost and selling price.

The ideal organization for the manufacturer is to carry it all in his head—money received in the left-hand pocket, money to be paid out in the right-hand pocket, pay in cash, then what is left is the profit, plus or minus the mental estimate of gain or loss from work in process or stock. This method eliminates non-producers, clerks, selling force, cost department, draftsmen, promotion charges, high finance, &c. Fortunately for the employed, a man's capacity is limited and where his business exceeds a certain amount it is necessary for him to unload and organize to handle large problems. How can this be done with maximum profit?

The answer in part is the subject of this paper. Having worked my way from a machinist's apprentice through drafting and engineering departments to the position of superintendent and manager, with a technical knowledge obtained by lamplight, after an experience of 32 years I feel qualified to discuss the phases and details of this problem, not as a mentor to those assembled but to suggest what can be done with many plants that are running on the principle of 1885 or 1886 with a few fashionable so-called system frills on the outside.

It would be unbecoming for me to deprecate in any way the immense amount of good work which you as individuals, manufacturers and an association have accomplished, and far be it from me to criticize, severely or unjustly, any of the efforts made to improve shop conditions. I beg, therefore, that what I say will be taken in the spirit of suggestion as to how your industries can have their earning capacity increased, labor fully rewarded and burdens lightened without investing too heavily in plant which in dull times is the millstone around the industrial neck.

### The Principal Point in Shop Management.

Having been asked by many of what the principal point in shop management consists, I was at a loss at first to find an answer. After analyzing in detail and by a process of elimination it boils down to "knowing where you are at." The organization and methods hereafter described will tell you this with reasonable accuracy and expense and economic results:

- The symbol method localizes expenditures.
- The stock cards, stores or worked materials.
- The time tickets, the efficiency of men and the cost of labor and machine hours.
- The payroll, the expense and classification of labor.
- The operation cards, sequence of work.
- The instruction cards, how to do work and what to do it with.
- The route cards, location of work in shop and a means of valuation of work in process.
- Time study and operation analysis establish basic conditions.
- Functionalizing of duties, an increase of machine output.
- Bonus for superintendent and foremen gives co-operation.

Study of weakness in shop organization and methods develops an astonishing lack of basic detail and truth, with a desire to play to the galleries, local and shop politics, on the part of many who desire to hold their jobs, combined with the following:

- A. Incapacity for those in charge to give clear and explicit orders and instruct those under them.
- B. Corresponding lack in those receiving orders to carry

them out, spending more energy and time in thinking of some other way to do the work than doing it.

C. Too many minds for the orders to filter through before reaching the man behind the lathe.

D. Disregard of promises of completion of work in shop and the shipment of the same.

E. Lack of conception of the meaning of the words "thorough" and "complete."

F. Trying on of new ideas without knowing how to make them fit.

G. Patent medicine ideas of new systems, such as high-prices, cost systems, Doolittle time system, P. T.'s. premium system, &c.

H. Expecting too much from managers, superintendents, and foremen and getting too little.

I. Humanity on the part of managers, superintendents and foremen in holding on to the job and protecting themselves. "Self-preservation is the first law of nature."

J. Lack of specific knowledge of capacity of speeds and feeds of machines by men and foremen.

K. Lack of detail, instructions and systematic methods of seeing them carried out.

L. No system of routing work through shop.

M. Extravagant and injudicious advertising.

N. Jealousy.

O. Lack of team work.

P. Too much brain work in proportion to hand work.

Q. Too much unused and useless information.

R. Overcultivation of the inventive mind in proportion to capital invested.

S. No method for the training of the workmen.

From observation and experience covering a number of years has been evolved a method of organization for industrial work which, while it is not perfect, has shown such improvement in results over the regulation methods that I believe its description would be of interest to you. There is nothing new in it, except the results, other than the co-ordinating of the best obtainable into an elastic organization which obtains the most direct results with the minimum number of forms and red tape. Thus is increased the efficiency not only of the hands but the brains of an organization by making the brain work more complete and thorough and compelling the machines to work harder and more constantly, thereby cutting down the time elapsing between the receiving of an order and shipping of the goods, which will necessarily reduce the value of the work in process and increase the volume of output. The time which work is operated upon is oftentimes less than one-half the time that the work lies round the shop.

### Data Needed for Shaping a Policy.

To gauge the management of a factory intelligently the following information is necessary:

1. Capital invested.
2. Productive and betterment labor.
3. Productive and betterment materials.
4. Expense, all kinds.
5. Average annual business, past.
6. Average annual business, estimates for future.

These facts are necessary as a guide for the most efficient policy to follow in shop management. The successful manager must know them to guide him in his work. The factory should then have the divisions as called for later and each should have apportioned to it, as nearly as possible, the expense burden it has to carry; next an estimate or record of the amount of productive labor and materials used in these groups or sections of the divisions. We now have data on which to shape the policy for the first year and will proceed to apply the following:

1. Functionalizing duties.
2. Forming an Advisory Committee.
3. Control of expenditures.
4. Time study for piece rates.

\* Address before the National Metal Trades Association, New York, April 14, 1910.

5. Distribution of information.
6. Determination of premium or bonus.
7. Machine hours.
8. Routing.
  - a. Operation lists, stores and worked material cards.
  - b. Production orders.
  - c. Standing orders.
  - d. Instruction card and drawings.
  - e. Requisition on stores.
  - f. Time card, clocks, and production department.
  - g. Inspection ticket.
  - h. Move orders.
  - i. Route card or schedule of work.
9. Payroll.
10. Analysis sheet.
11. Accounting.
  - a. Symbol sheet.
  - b. Proper use of symbol sheet with analysis sheet, time tickets and requisitions.
12. Costs.
13. Tickler.
14. Bonus system for superintendents and foremen.
15. Decision as to whether goods are to be made on special order or from stock.

Nos. 1, 4, 6, 7 and 10 are the vital points of this type of organization, and concentration on these will develop the necessity of the others and show gain even if carried out in a somewhat crude and amateur manner. Time will permit me to talk on these points only.

The essential difference in this type of organization from the ordinary type is the arrangement of duties and the dividing of the technical and mechanical work from the business or hustling end of the factory more definitely than is usually done.

All designing of product and tools, issuing of lists of machines on which the work is to be done, &c., are the function of the engineering division, while the chief of the producing division pushes it along the different lines by means of the routing system, and looks ahead, anticipating where the work is to be done and that all is ready to do with at the proper time. This insures greater rapidity in the work passing through the shop.

#### The High Importance of a Routing System.

My observations in this have shown that a well arranged method for routing work through the factory with duties properly functionalized increases its productive efficiency more than any premium, piece rate or bonus system, and, given the choice of only one, I should take a logical and consistent routing system to any of the others.

Take two factories exactly alike with an oversold product—one with a good piece rate or bonus system and a happy-go-lucky routing system, the other with a day work system and a first-class routing system—there is no question in my mind as to the latter showing a greater profit than the former, while a combination of the two will show results far beyond the most sanguine expectations. A good routing system automatically results in the following:

1. Gives basic cost information.
2. Locates a fall-down in output at once.
3. Locates all work and its conditions.
4. Relieves chiefs of divisions of "still hunts."
5. Compels chief and assistants to "watch out."
6. Records machine hours.
7. Insures accurate time charges.
8. Insures accurate account charges.
9. Shows up delays and their causes at once.
10. Shows work ahead for each machine and allows for rearrangement and redistribution.
11. Allows of most minute cost analysis if required; and if not, no unnecessary expense is insured for useless or *passé* information.
12. Compels closer attention to details all along the line.
13. Reduces amount of wasted energy and materials.

In conjunction with the above a tickler system is most important, and a shop can be run on this system alone better than on no system at all.

The tickler form is a 4 x 6 in. slip of paper or card, provided with a blank space for the name of the party to whom it is to be delivered, with the subject

and remarks. Below is a ruled space for dates on which the card is to be returned to the party whose name is on it. These cards are collected at night from a receptacle provided at desks and distributed in a filing cabinet by date; early the next morning all cards in folios of that date are taken out and distributed by a boy to those whose names appear on the card. This system is flexible and memoranda can be sent up and down the line. When once used, it becomes an indispensable adjunct to the factory.

#### Machine Hours.

The value of an accurate record of machine hours for computing costs approaches more accurately the ideal than any other method, and is of far more importance to the factory than is generally admitted or recognized. A machine, bench or vise should carry with it its exact proportion of the overhead expenses, and it is much more important that these overhead charges should be distributed by the machine hours than charged as an aggregate per cent. to the item of labor. This is especially true where a factory operates a large variety of machines of extremely low and high valuations.

Illustration: A machine costing \$10,000 would have an annual overhead charge against it for depreciation, rental, power, &c., of \$1500, based on 3000 hours a year, or 50 cents per hour. This would be as much if not more than the hourly rate paid the man who runs it. If the machine was run 1500 machine hours, the hourly charge would be \$1.04, or double the man's time.

The universal practice of adding a certain percentage to flat labor costs for overhead charges handicaps the actual cost of the work on smaller machines and at times causes the manufacturer to discontinue making an article which shows no profit on account of its having to carry the burden of the work done on a heavier machine. The machine hour, therefore, is a very logical method for distributing the overhead factory charges.

Another advantage of the record of machine hours is the check on foremen or superintendents applying for additional machinery when it is really additional tools that are needed or a reasonable method of maintaining the tools and machinery which he already has.

The machine hours are a better criterion of the efficiency of production than any records of the man's time. It is the machine through which the work must pass and the more constantly this machine is operated in turning out work the greater the volume of output becomes. It is therefore important that in the selection of the machines they should be selected with a regard to the interchangeability of tools and fixtures. It is much better to spend a few dollars for tools and repairs than a larger amount for machinery.

There are many level-minded business men who will spend any amount of time and money for correct methods of bookkeeping involving a bank balance of a few thousand, and yet will absolutely refuse to allow a factory to use sufficient clerical help whereby the means and methods of handling investments amounting to many thousand dollars can be increased in earning power. I cannot blame them, however, as the method of obtaining, recording and compiling manufacturing data is an expensive luxury, especially when such data is very old or cold when it reaches the eyes it was intended for. I have some rolls of paper collecting dust that have never been looked at that must have cost hundreds, yes, thousands, of dollars to compile. What is required is information on the spot that costs little to obtain and can be readily filed and compiled when required.

If basic conditions as to work in the shop are right and information as to fall-down in production is caught first hand and corrected at once, the bank balance will take care of itself.

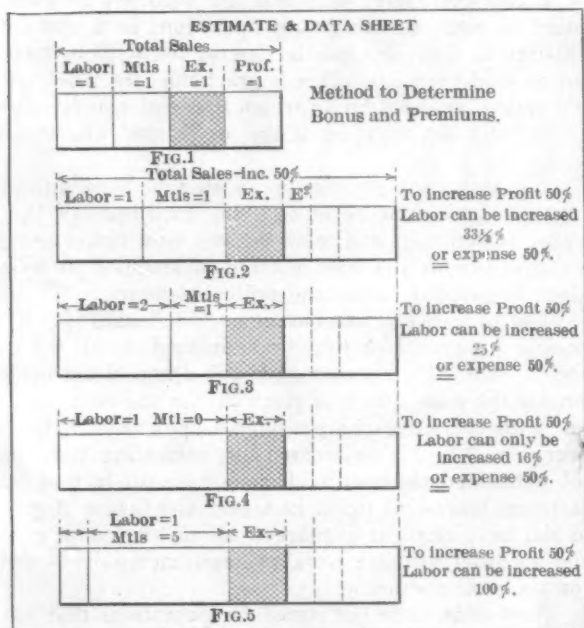
**Determination of Premium or Bonus for Workmen.**

The amount of premium or bonus to be paid a workman depends on the following:

Ratio of labor to material, expenses, selling price.

After assuming the amount of annual increase in business that is warranted by the condition of the market and comparing this with the producing capacity of the plant, it can then be determined from the relation of these two or to the advisability of offering additional reward to labor for increased effort. If the plant is oversold there is no question, and the amount it is oversold will form a guide for the initial calculation. Of course, additional business turned out in a given time at the same price for labor and material will give you an increased profit, and from this increased profit it is to be decided what proportion can be divided between the expense and the additional rewarding of labor. Time study will then determine the basic condition in your factory and the above will serve as a guide as to how far you can afford to go. These data will also show what proportion you can afford to give to your superintendents and foremen as an additional reward for closer co-operation.

The accompanying diagram shows graphically the



application of the above, which can be modified to suit different conditions.

**Divisions and Their Chiefs.**

Manufacturing can be grouped into the following general divisions, all of these functions entering into the manufacture of even the simplest article:

1. Engineering.
2. Producing.
3. Inspecting.
4. Accounting.
5. Maintenance.

Full authority should center on a works manager, who should be an official of the company. Competent chiefs should be selected for each division in cases where they will have plenty to do. If the shop is small and the product simple there can be a combination of any number or all divisions under one man. It is a very small business, however, that can afford to do too much loading up of division chiefs. The specific duties of each should then be clear and detailed.

The organization and duties being outlined, letters of instructions are issued and forwarded to those interested, so that each division may be kept in touch as to what is required of them and also that which is taking place in other divisions.

Where new products, fixtures, plant expenses or

other special expenditures are required a letter of authorization is issued by the works manager to the chiefs of the divisions giving the information required.

An advisory committee composed of division chiefs should be organized and should meet at the option of the works manager to discuss matters relating to shop operation.

**ENGINEERING DIVISION.**

An engineering division in this type of organization is of paramount importance, and should have at its head an able and practical engineer of excellent executive ability and broad mechanical experience. Upon the competency of this man depends the methods of manufacturing and arranging of machinery, for the following reasons:

With a thoroughly organized engineering department, manufacturing can be carried on by grouping of machine tools of a similar character. On the other hand, if there is no engineering department, or the engineer is incompetent, manufacturing must be done by group methods by a variable class of machine tools, which involves a large original investment and duplicate of machinery in a plant and a man above the average ability and experience in charge of each group. Such men as will attain to the highest efficiency are hard to find, and the volume and quality of output cannot be obtained by this method that can be obtained by the grouping of similar tools with proper inspection. It will thus be seen that the entire economical problem of manufacture is primarily dependent on the chief of the engineering division.

**PRODUCING DIVISION.**

In this type of organization the chief of the producing division is not called upon to exercise any great ingenuity or skill on mechanical matters or detail methods of operation. These are supplied in the form of specific information by the engineering division.

The manufacturing or producing of an article commercially should not call for change of methods and operations every fifteen minutes. It should be the economical effort to turn the work out under constant pressure, a certain value for each day for every day in the year.

The instructions from the engineering department as to the routing of work, the tools to be used, the limits or toleration which are to be worked and the drawings for the work should be placed at the disposal of the chief of the producing division, his duty being to see that all hands and machines are working at the highest efficiency and every machine that is possible is kept running the maximum number of hours producing work. He should also see that there is as little delay as possible between one set of operations and the next.

The chief of the producing division, therefore, comes next in importance to the chief of the engineering division. On the latter depends the accuracy of the instructions to the chief of the producing division, or the path the work has to follow, and to the former the speed with which these instructions are carried out. In other words, the chief of the producing division should be a hustler rather than a fine mechanic or engineer.

**INSPECTION DIVISION.**

The most sensitive and delicate division in this type of organization is the inspection division, and its chief should be a diplomat and at the same time a man with sufficient firmness in his make-up to stand back of decisions which are made under his jurisdiction. He should be able to say "No" in such a way that it will not antagonize the entire organization.

Instructions as to inspection, gauges and fixtures for testing work are given to this division by the chief

of the engineering division, and the chief of the inspection division has to see that they are lived up to. All troubles occurring in the making or assembling of the work are referred to the chief of the inspection division, who decides as to the quality of the work, and in case of serious trouble takes the matter up with the engineering division, where it is rectified, not only in itself, but also where it may relate to the other parts of the mechanism.

This division has entire jurisdiction over the inspection of all raw materials, work in process, finished stock or materials, and tools, jigs and fixtures.

Where machine operations are many and particular, as to limits and finish, traveling inspectors should be placed in the factory, who pass on these operations before the machine foremen are allowed to proceed with the machining of any number of parts on any operation; also checks speeds and feeds of machines. These inspectors save from three to five times their salaries in a year by bringing up the standard of work, saving of material costs, together with accumulative profits from increased output of acceptable parts.

They are of great assistance to the chief of the producing division and to the foreman, as well as increasing the volume of output by preventing extended operations on bad work.

On this division depends largely the smoothness with which the work passes through the shop and its cost, together with the grouping of work in assembling room ready for quick and accurate assembling. You will note that the operation of this division is dependent upon the judgment of the chief of the engineering division for the accuracy with which tolerations are determined and instructions given as to the quality and finish of work.

#### MAINTENANCE DIVISION.

The chief of the maintenance division, where the factory is large, should be a good executive mechanic, with a reasonable amount of technical education. Many of the larger concerns employ a high grade engineer to supervise this division, which furnishes plans and specifications for new buildings and equipment and handles the work of new construction as well as maintenance. Many firms consider this economical. The speaker, however, is of the opinion that the practice adopted by the textile organizations of this country in having most of their construction and engineering work done by outside parties, leaving the routine work of the maintenance to one of fair executive ability, is much more economical in the long run than to have plans and specifications for buildings and their equipment prepared by themselves.

Where the organization is not large or the duties of the chief of the maintenance division are not sufficient to keep him fully occupied this division is combined with the producing division or the engineering division, preferably the latter.

#### ACCOUNTING DIVISION.

The chief of the accounting division should be a man well trained in the principles of bookkeeping, a good analyst and with enough familiarity with shop methods to prevent being fooled entirely by figures. He should be systematic and a good disciplinarian, and insist upon his subordinates maintaining records to date.

With these methods a large part of the maintaining of records is automatic, and a general supervision of the accuracy of the figures and their prompt posting by his subordinates are particular qualifications. In addition to the above, he should watch the value of stock on hand, notifying the proper parties when abnormal conditions are approached and see that orders are entered or canceled as conditions require.

#### Explanation of Use of Forms.

The instruction card is the means of transmitting to the chief of the producing division and his foremen

details as to operations, jigs, tools and fixtures, &c., to be used; speeds and feeds of machines and other instructions which might be pertinent to the economical and accurate production of the work.

The operation card gives a description and sequence number of operation on the different parts and should be arranged so that it can be locked in a box in charge of the engineering division, and when changes are made in the sequence of operations these cards are taken out and placed in their new position. This saves rewriting lists every time a change is made.

An inventory of stock on hand in storeroom should be taken and transferred to cards.

There should be separate cards for stores and worked materials. By stores are meant all finished or raw materials kept in stock on which no work has been performed by the factory. After the pieces for the stores have been issued and work done upon them in the factory they are returned to the storeroom as "worked materials" and issued to the assembling room for assembling into final product. Requisitions for worked materials are not entered on analysis sheet when issued for same symbol numbers under which they are manufactured.

#### Routing.

I can positively state that the location of every piece of work covering 1200 operations in active circulation in a factory can be determined without hunting around the shop. This is practically the block signal system of the shop, in which the workmen or work is the train and the clerk in the production department is the signal man.

The man's pay is made up on his time card, and no man can get a new ticket on a job until his own time ticket is returned and stamped, the new ticket being stamped out at the time the old is stamped in by a block registering hours and tenths of hours.

The time ticket has the letters "F." and "N. F." provided on it. If a job is not finished at the end of the day, the "F." is crossed off and a new ticket made out for the man, which is given to him the next morning with the same charge symbol upon it. If, however, the "N. F." is crossed off, indicating that the job is finished, the man in charge of the production department places his ticket in a box, and before it goes to the time clerk, it is marked off on the route card and an order to move work to next machine is issued for the next operation.

Move orders are not issued for operations that run in sequence on different machines of same group. They are issued, however, where work passes from one group to another or to the inspection and storerooms. The use of move orders will reduce the number of men used for trucking in the factory 50 per cent.

The one requisite for efficient management is a simple and comprehensive accounting system, accurate in its information and inexpensive to maintain. For this purpose all transactions can be captioned as follows:

1. Capital.
2. Profit and loss.
3. Production.
4. Betterments.
5. Expense.

There can be subdivisions so as to give detailed information as requested, either by symbols or charge numbers, or both.

The analysis sheet as used in this method is a combination of a loose leaf shop ledger and cost card. These can be taken out for any one of the charge symbols, authorization numbers or other special order numbers, the details posted thereon directly from requisition, vouchers or payroll. These sheets are then closed in the final productive accounts.

The production account sheets are credited with sales, increase in inventory and closed to profit and loss sheet.

The betterment account sheets are closed in to expense accounts and capital by a predetermined ratio or actual charges.

#### Low Efficiency of the Average Machine Shop.

The average cotton mill produces, from 80 to 92 per cent. of its theoretical efficiency, while the average machine shop seldom reaches 30 per cent. With proper training and management this can be brought up to 80 or 85 per cent., yet when Dr. Fred W. Taylor, dean of industrial engineering, says that the output of the average factory can be doubled, the satisfied owner or manager wonders why the other fellow does not take advantage of it, never stopping to think that he needs it as much if not more. This is not impossible. It is possible and probable; and some of the illustrations will show that with even an ultimate efficiency of 60 to 70 per cent. the output of many plants can be doubled over what they are now producing.

I do not think that the sole reason for the increase in the output cited was the introduction of the forms illustrated, because you may carpet a factory with forms and not obtain the desired results. It requires intelligence to use forms, also requires a persistent, untiring energy and firmness on the part of the management to keep an organization working together with them at the start.

More diplomacy and patience have to be used in teaching those at the top than the rank and file to adopt economical and systematic shop methods. In no case have wages been reduced, and in every case the earning capacity of the men per day has been increased and the total cost of the product reduced.

The fundamental principles, however, are summarized in the training of the superintendent, foremen and workmen to systematic habits and convincing the officials of a company that a constant and systematic endeavor to classify and functionalize duties and route work is more remunerative than the continual harassing of the overburdened and oftentimes underpaid shop manager or superintendent.

Forget the ratio of nonproductive help to productive and gauge the efficiency of a factory by the value of output per dollar of total payroll.

#### Wire and Cotton Tie Freights to Texas Reduced One-Third.

AUSTIN, TEXAS, April 23.—The action of the Mallory and Morgan lines of steamships in reducing the freight rates on wire, wire fence strands, nails, staples, cotton ties and buckles, New York to Galveston, has aroused much interest among the Texas dealers in those commodities and created a stir among the traffic officials of the interstate lines of railroad. To the latter it is looked upon as the beginning of a war in water rates between New York and Galveston. The reduction is 5 cents per 100 lb., the former rate being 15 cents and the new rate 10 cents. On cotton ties and buckles the minimum weight at which this new rate applies is 30,000 lb. a carload, while on the other commodities mentioned the minimum weight is 36,000 lb. The new schedule becomes effective May 2 and shippers are being advised of the change. This reduction in the freight rate on a number of important commodities is generally regarded as aimed at the Baltimore & Texas Steamship Company, which recently started a new line of vessels between New York and Galveston. It is stated that one wire company, which recently arranged to concentrate its Southwestern shipments at Galveston, has contracted to route all of its freight by the Baltimore & Texas Steamship Company's line. The Texas Steamship Company, which operates between New York and Texas City, a sub-port of Galveston, has a contract with a large wire producer for transporting and concentrating all of its Southwestern shipments at Texas City.

### Scandinavian Iron Ores.

#### Important Additions to the World's Supply Made Available by Concentration.

BY JOHN BIRKINBINE.

Sweden has long been renowned for its rich and pure iron ores and for the quality of metal produced therefrom, and "Norway bars" have been held in high estimation, although no iron has lately been produced in Norway. The older Swedish mines have been exploited in the central and southern parts of that country, but later the Gellivara deposit in northern Sweden was developed and a railroad was constructed connecting it with Lulea on the Gulf of Bothnia. Subsequently neighboring deposits—Körunavaara, Luossavaara and Tuolluvaara were opened, and a railroad constructed across the boundary and through Norway to Narvik, where extensive shipping docks were erected, as described in *The Iron Age* of January 9, 1908.

Narvik has the advantage of open navigation throughout the year, while at Lulea this is possible for but half the year, conditions prevailing similar to those on Lake Superior. These northern Swedish ore deposits are controlled by the Government, and to conserve them a limit is placed upon the rate at which they can be operated. This limit will approximate 2,200,000 tons in 1910, of which 400,000 tons is expected to be delivered at United States ports. The ores are of high metallic content and are sold without being beneficiated, but they must pay freight charges on transportation for 132 miles to Narvik.

Some rich magnetite is also obtained on the Norwegian fjord north of Narvik, but the expectation that Norway will take an important position in the world's iron ore supply is based upon large deposits of lean magnetite along the Atlantic Coast, which will require beneficiation. Attention was drawn to these a few years ago by a pretentious installation at Dunderland, 80 miles south of Narvik, where a deposit of iron ore was exploited, a railroad being constructed from the Norwegian coast for some 40 miles, and a concentrating plant erected at large expense. The ore, however, did not respond to the treatment which was applied and the enterprise proved unsuccessful. It is understood that an effort may be made to revive this industry by the use of different appliances.

About 20 miles north of Narvik, at Bogen, ore is being magnetically concentrated at the rate of 100 tons per day, and 25 miles further north, at Salangen, another installation of the same character is producing 100,000 tons of concentrates per annum, which are shipped to Germany and there briquetted for furnace use. Close to Trumsö, an important Norwegian port further north, is a deposit where it is claimed there are large exposures of lean magnetite which can be cheaply mined and readily concentrated. Abundant water furnishing cheap power for this purpose, and being located on one of the fjords forming the Norwegian channel, this deposit requires no railway transportation, and it is proposed to erect a large concentrating plant, and possibly nodulize or briquette the concentrates.

#### Concentrates and Briquettes from Sydvaranger.

About 500 miles further north a German-Swedish company is installing a concentrating plant to treat ores obtained at Sydvaranger, at the extreme northeast boundary between Norway and Finland. This plant is expected to be in operation during the coming summer, \$3,000,000 having been spent on opening the deposits and constructing concentrating and briquetting works, a part of the equipment coming from the United States. The ultimate capacity is placed at 700,000 tons per annum (100,000 tons being briquetted), most

of which will be smelted in German and British furnaces, while some shipments may be made to the United States. This plant is expected to require 40,000 tons of coal per annum, which will be brought from Continental Europe as return cargoes, although it may be possible to employ some of the coal from the island of Spitzbergen.

These lean Norwegian ores average about 35 per cent. iron, with only moderate amounts of phosphorus and sulphur, which are much reduced by concentration, as these elements occur mainly as apatite and pyrite, respectively. The iron, as a rule, being strongly magnetic, simplifies the process of concentration. In Scandinavia the wet process is the rule, the ores being finely ground and rich concentrates obtained to economize freight charges. It is claimed that a ton of concentrates can be produced for less than \$2, and the estimate of available material for concentration runs into hundreds of millions of tons. It is therefore possible that from the Norwegian fjords large additions to the world's iron ore supply may be expected.

## The Improved Rasmus Electric Hoist.

### A Form of Wider Adaptability.

In *The Iron Age* October 14, 1909, a description was given of an exceptionally compact and light electric hoist. These characteristics were principally due to the unique use of the hoist drum as the motor field frame. Since the above description was printed the inventor and manufacturer, Gustav Rasmus, 514 West Fifty-seventh street, New York City, has made several modifications in the details of the hoist and has generally refined the design, making it more pleasing from a mechanical point of view and its manufacture more expeditious and economical. In functions the hoist herewith illustrated differs from the one previously described in the addition of power traveling mechanism, but it is also furnished without the extra motor and arranged to be traveled by a hand chain.

Fig. 1 shows the general appearance of the hoist, and the sectional view, Fig. 2, the construction and operation. By comparing these illustrations with those of the earlier article it will be seen that the principle

of the operation is the same as before and that the changes are almost entirely confined to details of construction. One of the most important of these is the inclosing of the worm wheel and worm transmitting the drive from the motor shaft to the short horizontal shaft which drives the drum. The worm and the lower half of the worm wheel now run in oil, keeping them constantly lubricated. The frame is simpler than before and all gears are protected. The machine is now so nearly

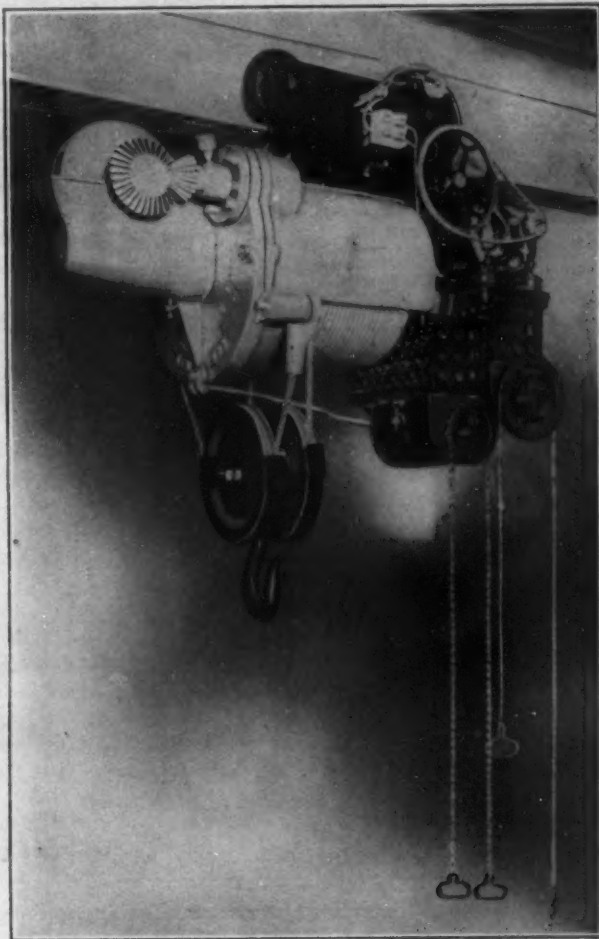


Fig. 1.—The Improved Type of Electric Traveling Hoist Built by Gustav Rasmus, New York.

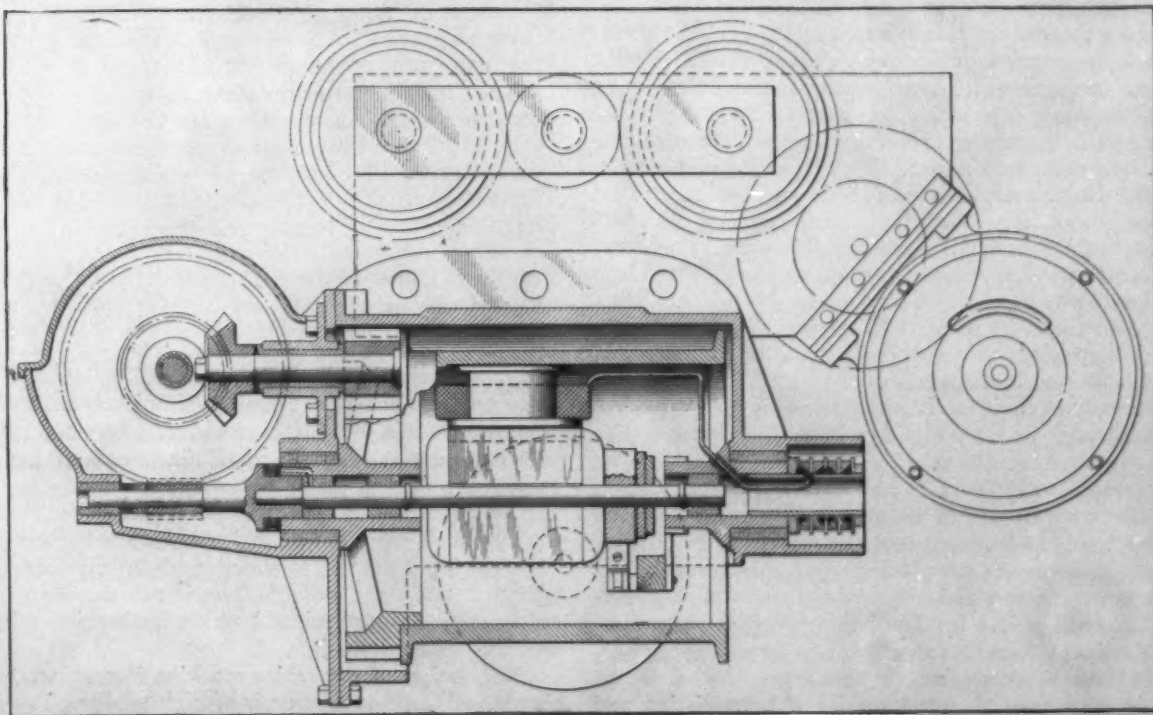


Fig. 2.—Sectional Elevation of the Improved Rasmus Electric Hoist.

completely inclosed that it is entirely suitable for outdoor operation in any kind of weather.

Fig. 2 shows the hoist without the controller, but in Fig. 1 the mounting of the controllers may be seen. Each is manipulated from the floor by pendant chains. The controllers are of the standard type manufactured by the Cutler-Hammer Mfg. Company, Milwaukee, Wis.

The Rasmus hoists are made in sizes of 1, 2, 3, 5 and 7½ tons capacity. The largest has a 10-hp. hoisting motor and the smaller ones in proportion. The power of the traveling motor varies with the speed required. The hoisting speeds of the five sizes range from 30 ft. per minute for the smallest to 12 ft. per minute for the largest, and the weights from 675 to about 1100 lb. All of the bearings are either phosphor bronze or a special babbitt. The armature of the motor and the field pieces and brush holders are of Bullock type, furnished by the Allis-Chalmers Company. The traveling motor is furnished in whatever make the purchaser may prefer.

One of the features of the hoist which conduces to long life and most satisfactory operation is the extremely large size of the sheaves. Those in the hook block are 12 in. in diameter and the one on the back of the hoist around which the rope takes its turn is nearly as large. All sizes of the hoist require a head room of about 35 in. from the carrying part of the hook to the bottom of the rail. For smaller head room the hoist can be swung between I-beams by casting lugs on the frame of the hoist for its support. The standard lift of the hoist is about 15 ft. The frame castings are malleable iron and the drum castings electrical steel. All of the gears and shafts are steel.

A slightly different limit switch is now provided, this being merely a mechanical arrangement which throws the controller to the off position when the hoisting hook approaches close to the drum. Both of the controllers have spring returns, so that they cut off the current when the pull chains are released.

#### The Forest Products Laboratory at Madison.

An event of importance to the wood using industries of the country and to engineers is the completion of the Forest Products Laboratory, at Madison, Wis. June 4 has been set as the date for the formal opening. The laboratory has been established to aid, through experiments and demonstrations, the lessening of waste in the manufacture and use of wood. It is a co-operative undertaking between the United States Department of Agriculture and the University of Wisconsin. The State has erected for the purpose a new building at the university, and will furnish also the light, heat and power. The Department of Agriculture has supplied the equipment and apparatus, and will maintain the force of 35 or 40 persons required to carry on the work. Through this arrangement the United States has secured perhaps the largest and best equipped wood testing laboratory in the world.

A number of vacancies in engineering positions in connection with the work will be filled in May and June. Among these are positions of engineer in wood preservation, engineer in timber testing and chemical engineering. These positions will be given to men with a basis of thorough engineering training, or two or three years' experience in practical work.

The laboratory will be prepared to make tests on the strength and other properties of wood, to investigate the processes of treating timber to prevent destruction by decay and other causes, to study the saving of wood refuse by distillation processes, to examine the fiber of various woods for paper and other purposes, and to determine the influence of the microscopic structure of wood on its characteristics and properties. Facilities are at hand, in fact, for almost any kind of test on wood that practical conditions may require.

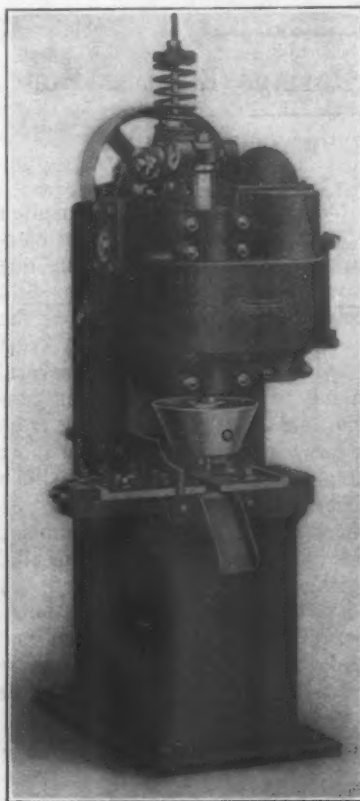
Many prominent men of the lumbering and wood using industries have signified their intention to attend on the day of the opening. Several organizations expect to hold directors' meetings or conferences at that time to consider, among other matters, plans for making wide practical use of the laboratory. A short, appropriate general programme will be arranged, and there will be a systematic inspection of the laboratory, with demonstration work in progress at the time.

#### The National Semi-Automatic Nut Burring Machine.

A new nut burring or shaving machine for removing the fins or burrs from hot pressed nuts has been added by the National Machinery Company, Tiffin, Ohio, to its line of bolt, nut and rivet machinery. This machine is of the semiautomatic type and the mode of operation is clearly shown in the accompanying engraving. The advantages claimed

are maximum production and the elimination of all chance of accident to the operator, which is present to a greater or less extent when nuts are fed under a rapidly revolving cutter by hand. Another feature is that a more uniform and better finish is secured.

In operation the nuts are placed in a slot at the side of the machine and fed forward by the operator. The raising and lowering of the burring spindle and the feeding of the nuts under the revolving cutters are entirely automatic. After the burr has been removed the finished nuts are ejected



A Semi-Automatic Nut Burring Machine  
Built by the National Machinery  
Company, Tiffin, Ohio.

from the machine automatically and pass through the chute shown in front.

It is stated that this burring machine will easily take care of the output of a hot pressed nut machine and, like the burring machine of the same maker which was illustrated in *The Iron Age* February 4, 1909, is capable of turning out from two to four times as much work as can be produced by a hand fed model. A more uniform and better quality of finish is secured, it is stated, than is possible in machines where the movements are not mechanical, as all the burr is effectually removed. The cutters are lowered gradually by the movement of a cam and there is no tendency for the burr to turn over the edge instead of being cut off. The cutting head is provided with a compensating spring to take care of variations in nut thickness, and safety devices are provided both on the burring spindle and the feed mechanism.

The design of the entire machine is comparatively simple and the construction is of high quality. The machine is intended to take nuts of sizes from 1¼ to 2 in., the changes being quickly and easily made, and it is said that a boy can easily attend it.

## Gardner's Patternmakers' Disk Grinder.

### A New Machine for Workers in Wood.

It may be that the now familiar disk grinders for metal finishing were first suggested by the crude arrangements of wood disks faced with sandpaper as used on lathes for finishing wood parts. However that may be, the latter stood still while the former were developed to a high degree of convenience, accuracy and general usefulness. Now it appears that the old debt has been repaid, for it is unquestionably the experience gained in building metal finishing disk grinders that made it possible for the Gardner Machine Company, Beloit, Wis., to design its patternmakers' disk grinder. The fundamental principle of a revolving wheel faced with a circular flint or garnet paper is still adhered to, but it has been so surrounded with improvements, particularly those having to do with the guiding and supporting of the work, that it may justly be considered a new type of machine.

The machine is made in both single and double end patterns. Fig. 1 shows the No. 16 patternmakers' disk grinder of the single ended type, but it is also made with disk wheels and work tables on both ends so that it may be used by two workmen at the same time. The disk wheels are furnished in diameters from 24 to 30 in. A 2-in. diameter crucible steel spindle with heavy wheel collars supports the wheel. The bearing boxes are long and are lined with babbitt, bored, reamed and scraped to an accurate bearing. The same arrangement



Fig. 1.—The No. 16 Single-End Patternmakers' Disk Grinder Built by the Gardner Machine Company, Beloit, Wis.

used in other of the company's disk grinding machines has been provided in this one for taking the end thrust. That from both directions is taken at the right hand box on hardened steel collars 4 in. in diameter, giving  $9\frac{1}{2}$  sq. in. of thrust bearing surface at each end of the box. The hardened collars run on cast iron plugged with babbitt. Should the spindle heat, the thrust bearing will loosen itself instead of binding. The spindle pulley is 10 in. in diameter by 5-in. face, and the intended peripheral speed of the wheel is 6000 ft. per minute; 5 hp. is sufficient for the drive of the machine. A single ended machine, such as that illustrated, complete with countershaft, weighs 1200 lb.

The important and particular new feature of the tool is the work table. This, as may be seen in both Figs. 1 and 2, is adjustable up and down, and may be dropped below the disk wheel to give free access for refacing the wheel. The work table is counterbalanced by a weight within the base of the machine connected by a steel cable working on a sheave on the top of the machine. Thus the table can be easily raised and lowered, and by means of two quick acting bolts it may be locked in any position. Also the table may be tilted to any angle with the face of the wheel and instantly locked. Graduations on the segment supporting the table allow setting accurately to any angle quickly and



Fig. 2.—Grinding a Piece of Wood at an Angle with Both the Face and the Edge.

without reference to any instrument. The original and peculiar construction of the work table and its mounting are entirely due to the main aim to secure the greatest possible convenience in the handling of the work for which it is adapted. The axis of the table about which it turns is so positioned that the back edge of the table is always close to the face of the wheel regardless of the angle in which it is placed. This introduces important advantages which are obvious.

The illustrations also show the work table fitted with an angle protractor, or square gauge. This is graduated from 0 to 45 degrees in either direction and any desired angle or combination of angles can be obtained quickly and accurately. A slight turn on the screw handle shown locks both the graduated plate and the gauge bar, which can be used facing either way to suit the convenience of the operator. The graduations of this angle gauge in connection with those on the head of the table make it possible to set the machine for the grinding of almost any combination of compound angles. So far as the turning out of work is concerned, that which appeals in this machine perhaps as much as anything is the independence of the condition of the materials worked. The wood may be knotty, cross grained, hard or soft, and even have nails or screws exposed where they ought not to be, and it makes little or no difference to the machine. The worst that can happen is the destruction of the sheet of sandpaper, which may easily be replaced.

Among special applications of the machine are the truing up of angular pieces with draft, work usually

done with a plane and sandpaper, the grinding of a double angle on a piece to required dimensions and the grinding to a gauge line with draft.

The disk wheels are permanently attached to the machines and are readily refaced without being removed from the spindle. No press is required for refacing the wheel. The maker of this tool is at present working on other patented devices and aims to make this patternmakers' disk grinder the most useful and necessary tool in the patternshop. Already very favorable reports have been received from users of the machines, indicating the greater speed with which work may be accomplished, greater accuracy, a minimum of danger and a general gain in convenience of the working and character of the work turned out.

### Two New Rockford Sensitive Drills.

The single spindle sensitive bench drill and the multiple spindle sensitive floor drill made by the Rockford Lathe & Drill Company, Rockford, Ill., have been illustrated and described in these columns before, but the company has recently brought out a new model in each of these lines, which are illustrated herewith. Practically no changes have been made in the design of the standard types, except such as were necessary to adapt them to the new models.

Fig. 1 shows a five-spindle floor drill with self-contained countershaft. The single spindle drill of this type and a four-spindle drill were described in *The Iron Age* March 18, 1909, and January 27, 1910, respectively. The drill is provided with a base and column carrying five spindles, each of which is provided with a large diameter cone pulley and is driven directly

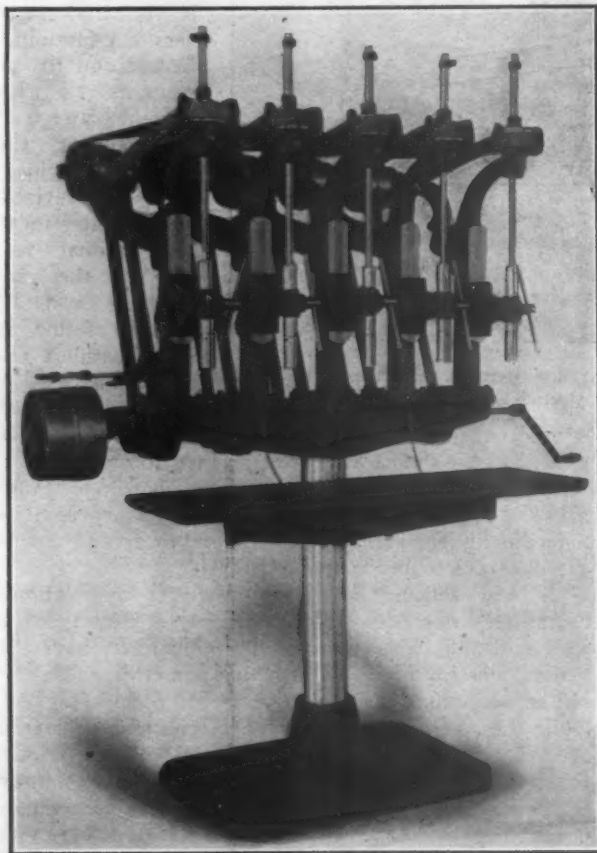


Fig. 1.—A Five-Spindle Sensitive Drill with Self-Contained Countershaft Built by the Rockford Lathe & Tool Company, Rockford, Ill.

from the main countershaft. The spindles are crucible steel and each is counterbalanced with a spring and plunger. The latter fits in a taper spline in the quill or sleeve and is regulated by a screw. The table is adjustable for height and is counterbalanced by a weight

inside the column. A ratchet gear on the elevating shaft holds the table against descending when there is extra weight upon it or thrust from drilling. The table rests on a three-point bearing and is furnished with a lock nut adjustment.

The principal dimensions of the machine are given in the following table:

Distance between spindle and post, inches.....	7
Distance between spindle centers, inches.....	8 <sup>3</sup> / <sub>16</sub>
Maximum distance from table to spindle, inches.....	38
Diameter of spindle in sleeve, inches.....	7 <sup>1</sup> / <sub>2</sub>
Travel of spindle, inches.....	5 <sup>1</sup> / <sub>2</sub>
Vertical adjustment of head, inches.....	9
Hole in spindle, Morse taper.....	No. 2
Width of belt, inches.....	1 <sup>1</sup> / <sub>2</sub>
Diameter of driving pulley, inches.....	10
Size of table, inches.....	12 x 46

The 10-in. sensitive bench drill press shown in Fig. 2 was illustrated and described in *The Iron Age* November 4, 1909, but without the electric motor drive. The motor for operating the drill is mounted on an extension of the base and the driving pulley is mounted

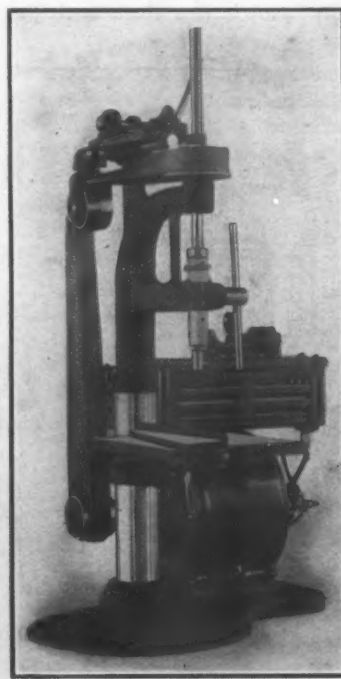


Fig. 2.—A 10-In. Motor Driven Sensitive Bench Drill.

on the end of its shaft. Two idler pulleys are supported on a bracket which can be adjusted through a rack and pinion to tighten the belt. The controller for the motor is mounted above the motor and to one side of the column in a convenient location. The table can be swung around the column and tilted to any position and is provided with a gauge.

The spindle is counterbalanced with a taper plunger that fits in the spline of the quill. This plunger is adjusted by a spring and screw located at its back. A stop collar is placed outside of the quill or sleeve and furnishes a positive stop for the spindle. The spindle is  $\frac{3}{4}$  in. in diameter and 17 in. long. A lever feed is provided and through it the spindle may be fed a distance of 3 in. The table top is 8 in. square, and has a vertical adjustment of 9 in., while the greatest distance from the spindle to the table is 12 in.

**"Coke" and "Charcoal" Tin Plates.**—A meeting of tin plate merchants was held at Liverpool, England, recently at the request of the iron and general metal trades section of the Chamber of Commerce of that city to consider the proposed abolition of the terms "coke" and "charcoal" as applied to tin plates. It was stated that the use of these terms was out of date and impracticable. Tin plates being now made of steel with a coating of tin, it was contended that the descriptions applied are misleading. Consumers found a difficulty in describing what they wanted in terms which insured the strict fulfilment of their orders. What was desired was a description which would indicate exactly what was being sold. After a long discussion, a resolution was proposed that the use of the words "coke" and "charcoal" as applied to tin plates should be discontinued. A tie vote resulted, and as the chairman refused to cast the deciding vote, the matter was left without action.

### The Little Giant Automatic Opening Die Head.

The darker parts of the accompanying illustration bring out a recent improvement to the Little Giant bolt cutting, nut tapping and pipe threading machine made by the Wells Brothers Company, Greenfield, Mass. This is an automatic opening die head and is now furnished on all the 1, 1½ and 2 in. machines, but the heads can be opened and closed by hand, as heretofore, when desired.

The automatic opening and closing of the head is governed by the movement of the vise carriage forward and back. The essential features of the device are the cam ring with knock-out projection on the outside of the head, the upright spring stud in the web under the head, the releasing rod which extends horizontally through the web from the spring stud to the outside of the bed, and the long rods carrying the set stops at the side of the bed.

When the head is closed and the dies are cutting, the upright stud under the head is held within the supporting web so that its head is just flush with the

struction gives ample power for instantaneous action. All that is now needed is to put the work into the vise, set the stops and the machine will do the rest, insuring not only uniform accuracy in diameter but in length as well. Blind holes can be tapped in work held in the vise to good advantage.

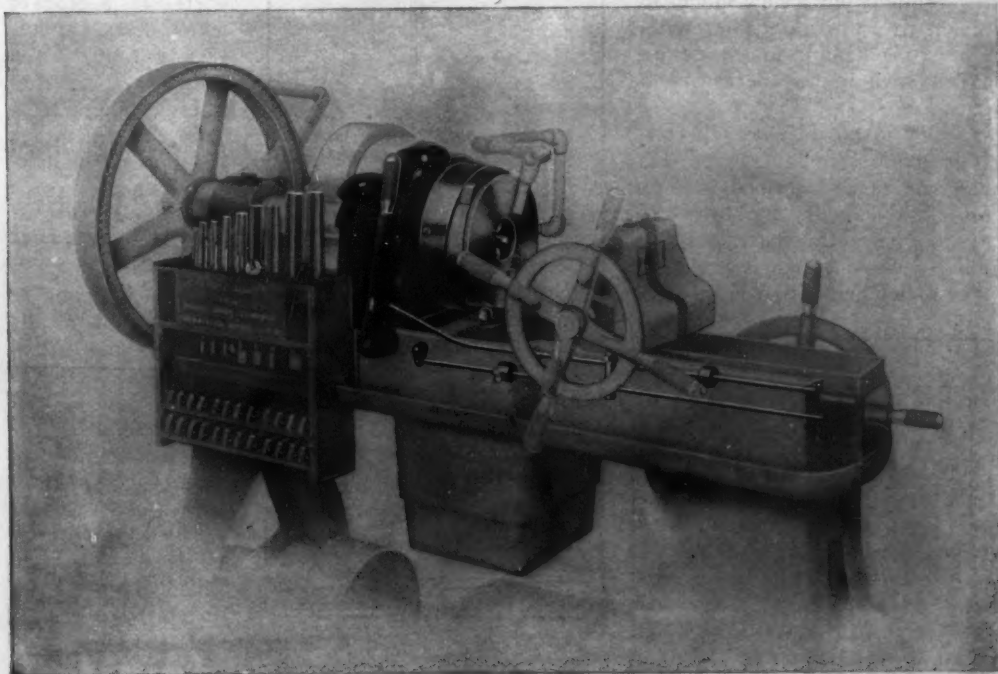
### American Society for Testing Materials.

The secretary, Prof. Edgar Marburg, Philadelphia, announces that the thirteenth annual meeting of the American Society for Testing Materials will be held at the Hotel Traymore, Atlantic City, N. J., Tuesday to Saturday, inclusive, June 28 to July 2, 1910. The present membership of the society is 1266, which is a net gain of 106 since the last annual meeting, 130 new members having been added, while 17 members have resigned, and there have been seven losses by death. The indications are that at the end of the present fiscal year there will be a deficit of \$2000. It is proposed to abolish the contributing membership class and to

increase the dues from \$5 to \$10 a year. A junior membership is to be created, consisting of persons less than 30 years of age, for whom the annual dues will be \$5. If the dues are raised, a year book, bound in cloth, will be furnished annually to the members, containing, in addition to the contents of the present annual pamphlet the standard specifications in revised, up to date form. The annual volume of the proceedings would also be found in cloth without extra charge to members for binding. It is proposed to have the fiscal year begin in 1910 on August 1, with \$5 dues (\$2.50 for junior members) to January 1, 1911. The next fiscal year, it is provided by amendment, shall begin January 1, 1911, and for it the dues are to be on the new basis.

A new scheme for designating the association's committees has been adopted, effective May 1, 1910. The iron and steel committees, for example, have the general designation A, with added numerals, the Committee on Standard Specifications for Steel being A1, while the committees on Wrought Iron and Cast Iron are A2 and A3, respectively. The B committees are those on Nonferrous Metals, the C committees those on Cements and Clay Products, while D committees deal with Miscellaneous Materials and E committees with Miscellaneous Subjects.

**Drawback on Structural Steel.**—The Treasury Department's regulations of August 2, 1902, providing for the allowance of drawback on structural parts of bridges manufactured by Milliken Brothers, Inc., New York, in part from imported rolled steel plates and shapes, have been extended to cover the exportation of structural steel manufactured by the Snare & Triest Company, New York, from imported steel beams.



The Automatic Opening Die Head as Now Furnished on Little Giant Bolt Cutters, Nut Tappers and Pipe Threaders, Built by the Wells Brothers Company, Greenfield, Mass.

top surface of the web. This stud is mounted on a spring and is held down in the web by the releasing rod; when the rod support on the vise carriage strikes the set stop the small crank at the end of its long rod is thrust forward. As this crank is mounted on the end of the releasing rod in the web, its forward movement turns the releasing rod. This releases the upright stud, which springs upward.

The stud is so placed that it springs up just in front of the cam ring at its narrowest point; then one revolution of the head with the edge of the cam ring bearing against the revolving stud forces the head open and brings the knock-out projection around to the stud, which is forced down into the web and there locked again. The rod extending from the hand lever to the end of the bed parallel to the knock-out rod is also provided with a set stop, and serves to close the head automatically as the vise carriage is run back.

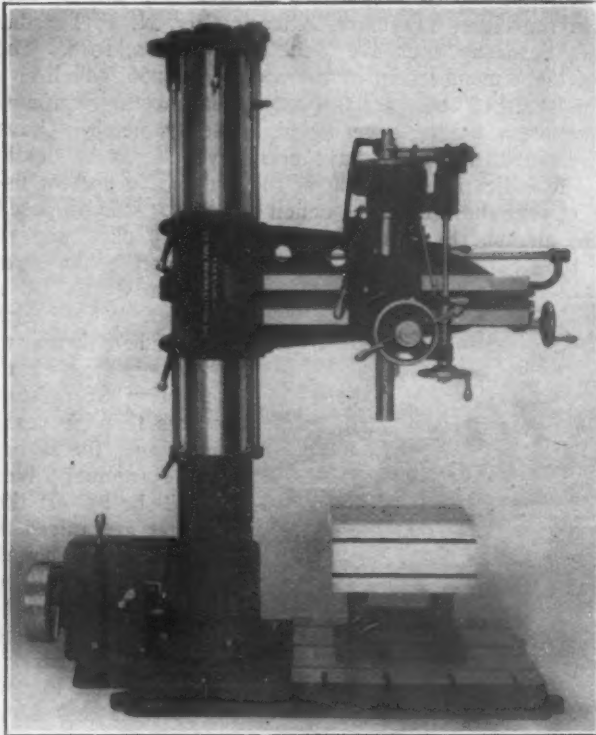
The construction of the yoke over the back of the head has been made stronger. The yoke is linked to the yoke support at the top and to the two forks on the lever shaft at the bottom, with a toggle joint in the middle, at each side. The yoke carries two segments, one on each side of the head, which fit into the groove in the back of the head. This form of con-

S. DIESCHER & SONS,  
Mechanical and Civil Engineers,  
PITTSBURGH, PA.

### A New Mueller Radial Drill.

The convenience of the operator and the employment of labor-saving devices are two features which have received special attention in the new radial drill built by the Mueller Machine Tool Company, 2425 Colerain avenue, Cincinnati, Ohio. While this machine embodies a number of the features found in the maker's standard line of drills, an effort has been made to eliminate the least necessary of the refinements.

The stationary column is of a patented construc-



The New Radial Drill with Speed Change Gear Box, Built by the Mueller Machine Tool Company, Cincinnati, Ohio.

tion and is cast in one piece, with four internal ribs extending its entire length to add to its stiffness. It is bolted to the base, giving it exceptional rigidity and eliminating vibration, both of which are essential to the production of high class work. The arm is of pipe section and possesses great resistance to torsion and bending strains induced by the upward pressure on the spindle when heavy drilling is being done. Two binder handles shown in the engraving are provided for clamping the arm to the column, and it can be rapidly raised and lowered and its position instantly controlled by a lever on the cap, which is within easy reach. A graduated ring on the column enables the operator to bring the arm to any definite position as often as may be desired.

The head is traversed by a double pitch screw, and this in connection with the graduated dial on the end of the arm enables the operator to bring the head within 0.001 in. of the desired position, and it can be instantly locked in position by a small binder handle. The back gears are located on the head and can be engaged or disengaged while the machine is in motion by a lever located on the head, directly in front of the operator.

A bronze plate attached to the arm of the machine enables the operator to select the proper speeds for different kinds of drilling, and make the necessary changes without stopping the machine. Twelve spindle speeds are available. The spindle is of high carbon crucible steel and has quick advance and return, and is counterbalanced. The tapping mechanism, which is so arranged that very heavy tapping operations are possible, is also located on the head. An adjustable gauge nut causes the tap to slip when it

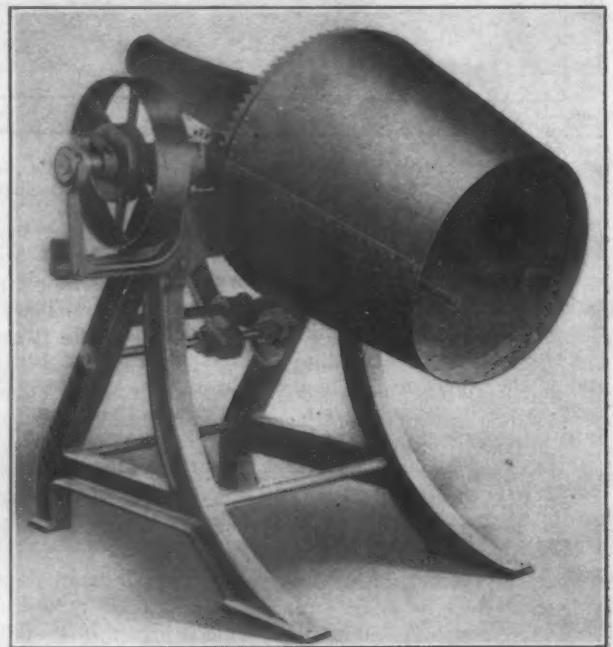
reaches the bottom of the hole, preventing it from being broken. The levers controlling the different movements of the spindle are located on the head directly in front of the operator.

Eight changes of feed in approximately geometrical progression are provided for each spindle speed. Any one of these feeds can be substituted for any other while the machine is in motion, and the mechanism is such that it can be used either as a positive or friction feed. The automatic trip for the feed is provided with a safety stop. When the drill enters the work, a graduated bar on the counterbalancing weight is set at zero. This bar is provided with several adjustable dogs to trip the feed as often as may be desired. The speed box is of the geared friction type and provides for six changes, any one of which is instantly available by moving the lever in the direction of the number on the lid, indicating the desired speed.

All gears, both spur and mitre, are planed and all shafts and the column are ground to size. The base is unusually heavy, especially where the column is bolted to it. It is provided with ribs and cross ribs, and also large T-slots. The plain box table which is shown in the illustration is the one furnished with all machines, but any of the other customary styles can be furnished at extra cost. These drills can be equipped for any type of motor drive.

### A Large Baird Oblique Tilting Tumbling Barrel.

The new size of the Baird oblique tilting tumbler shown in the accompanying illustration was brought out by its builder, the Baird Machine Company, Oakville, Conn., in response to the demand for a machine to tumble castings of medium size and weight, such as the larger sizes of chain, stove trimmings, valves and the like. In common with the double tilting tumbling barrel which was illustrated and described in *The Iron Age* July 1, 1909, the simplicity and the rapidity of the machine in operation are two prominent features. Besides these, it possesses all the other features found in



The No. 3 Oblique Tilting Tumbling Barrel Made by the Baird Machine Company, Oakville, Conn.

the Baird line of tumblers, which include ability to put in work and water, inspect the articles while the operation of tumbling is being carried on, and to tilt, elevate or dump the barrel without stopping the machine.

The operation of this machine is controlled by a clutch pulley and lever which are placed in a con-

venient location near the tilting crank, and is said to be comparatively easy because of the back geared tilting mechanism with which it is equipped. A rubber gasket on the cover completely seals the barrel, making it water tight.

The barrels used with this machine are made of either cast or sheet brass, cast iron, sheet steel or wood, and vary in diameter at the base from 28 to 48 in. in diameter, any size within these limits being capable of mounting therein. The capacity of the machine, which is the largest of its kind yet built, is about 700 lb., or 4 bushels of work, and the weight of the machine without the barrel is about 2000 lb.

### The Dreses Motor-Driven Universal Monitor Brass Lathe.

The Dreses Machine Tool Company, 227 West McMicken avenue, Cincinnati, Ohio, has extended the application of the motor drive which was illustrated

temporary stops and starts can be made very quickly in this way. To avoid vibration it will be noticed that the lower cone is placed as low as possible, and this arrangement also possesses the additional advantage of allowing a long belt between the cone pulleys to be used. Where the belt straddles the bed, clearance is provided by making the section between the spindle bearing blocks thin and correspondingly deep to secure the requisite strength and stiffness.

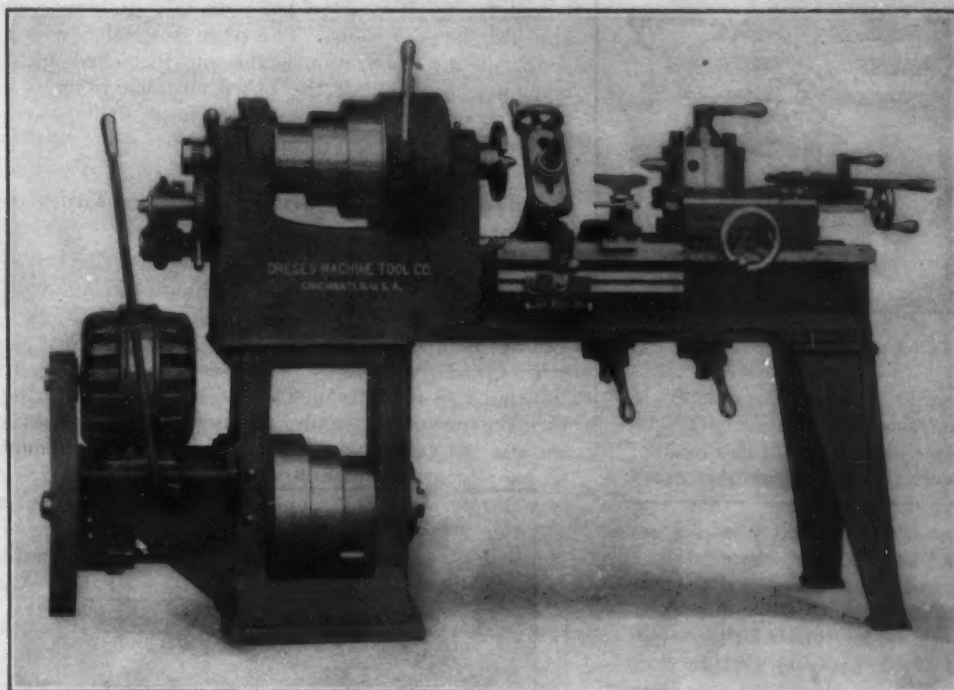
As has been previously stated, the lathe was redesigned about six months ago and contains several new features which it is claimed make it possible to turn out more and better work than can be handled with the ordinary universal monitor lathe, more economically and without the use of special tools. The special features were mentioned at the time the lathe was described and it is not necessary to repeat them at this time.

The headstock has all inclosed friction back gears, and this friction is of the toggle joint type and so designed that the whole operating mechanism can be re-

moved or put in place without taking out the spindle. A standard automatic chuck operated by the handle shown below the cone pulley is provided for the spindle. The chasing bar has a yielding follower holder that maintains contact with the leader in chasing taper work. Knurled screws are provided for minute adjustment of the taper attachment. The machine is intended to be used for all possible work occurring in the manufacture of brass or similar goods, and to that end is equipped with a vertical forming rest, cutting-off rest and hand and slide rests.

While the lathe shown is intended to

be operated with a constant speed motor, a variable speed motor can be employed by substituting a single pulley for the cone pulleys in the lower part of the head and on the headstock.



A 16-In. Motor-Driven Universal Monitor Brass Lathe Built by the Dreses Machine Tool Company, Cincinnati, Ohio.

and described in *The Iron Age* February 25, 1909, to its entire line of screw machines and turret and brass lathes. The latest machine to which this has been applied is the 16-in. model of the universal monitor lathe which was redesigned the latter part of last year and described in *The Iron Age* November 25, 1909. Geared speed changes are almost out of the question because of the high spindle speed of such a lathe. The mounting of a variable speed motor on the head is also objectionable because on account of its large size it is not only unsightly, but a source of vibration that affects the quality of the work. It was therefore decided to use a constant speed motor and to make the speed changes by cone pulleys.

The motor is  $2\frac{1}{2}$  hp. and of the constant speed polyphase type, and is placed on a bracket at the end of the lathe. A countershaft cone is placed in a cabinet support under the head of the lathe, and a large gear on this shaft meshes with a rawhide pinion on the motor armature. As the starting and stopping of the machine by an electrical controlling device would not be quick enough for brass and similar work, a friction clutch is provided operated by the long lever shown at the head end of the lathe, which connects and disconnects the lower cone pulley from its driving gear. As the motor runs constantly while the tool is in use,

Important contracts have recently been placed by the Baltimore & Ohio Railroad for enlarging and improving its ore docks at Lorain, Ohio. It is stated that the expenditure will involve about \$500,000. The storage capacity will be 400,000 tons. The power house will be a two-story building, 70 x 90 ft., of brick construction, and will contain two 1000-hp. Buckeye engines and two 500-kw. Westinghouse electric generators. A concrete dock and timber cribbing, 845 ft. long, will be constructed along the river.

Washington advices state that postal receipts during March at the 50 largest cities reflect a decided improvement in business compared with the same month last year. Nashville, Tenn., was the only office reporting a decline. The general percentage of increase for the month was 14.70 per cent. The total gross receipts amounted to more than \$10,700,000, an expansion of nearly \$1,500,000. Springfield, Mass.; Providence, R. I., and Seattle, Wash., headed the list.

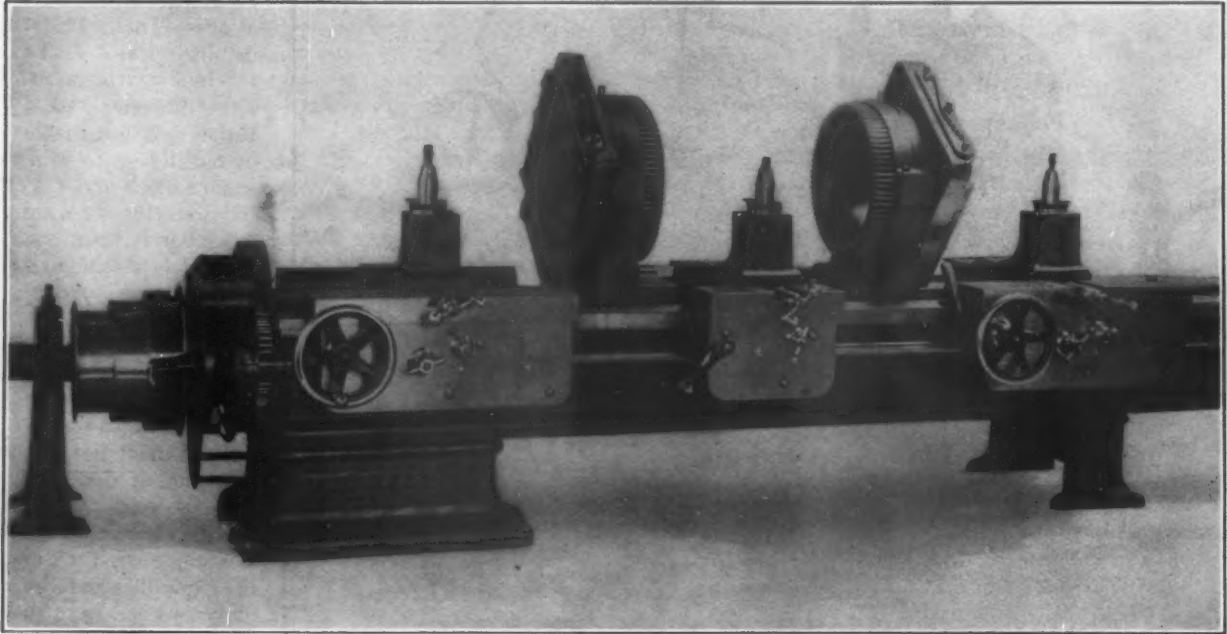
### A Fay & Scott Double End Turning and Facing Lathe.

The accompanying illustration shows a double end turning and facing lathe recently designed and built by Fay & Scott, Dexter, Maine, for the Merrimac Iron Foundry, Lawrence, Mass. It is designed for squaring up the ends and facing the flanges on heavy

in. and the flange diameter 32 in. The lathe illustrated has a 26-ft. bed and weighs 12,000 lb.

### The National-Acme Screw Machine Milling Attachment.

Not infrequently a piece, such as that shown in Fig. 1, which is otherwise entirely a screw machine product, requires a subsequent milling operation. Under



A Double-End Lathe for Facing and Turning Cast Iron Columns Built by Fay & Scott, Dexter, Maine.

cast iron columns and other similar work held in chucks or work holders on the bed. Three carriages are provided, one at either end and one in the middle. The two former have both power lateral and cross feeds, while the other has the cross feed only. The two chucks or work holders receive their power from a spline and shaft running through the center of the bed, upon which are mounted two sliding pinions that drive through an intermediate gear to a hollow gear forming a part of the chuck. The jaws of the chuck, which are hardened cast steel, are operated by two screws working simultaneously through a connecting chain and hold the work sufficiently rigid to withstand all cutting strains. The changes of the carriage feed are obtained through a quick-change sliding tumbler gear at the head of the lathe.

This machine is intended to handle pieces whose maximum length is 22 ft. 6 in., the column diameter 13

ordinary conditions this means a rehandling of the work after the forming and threading on the screw machine and the attention of an additional man or a boy

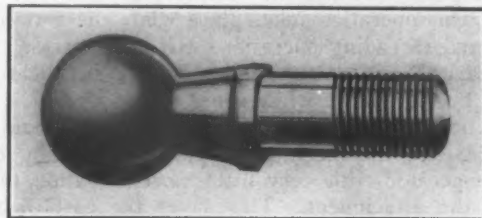


Fig. 1.—A Radius Stud with Milled Flats, Made Complete in a Screw Machine.

to operate the miller. By means of an attachment which is now being made by the National-Acme Mfg. Company, Cleveland, Ohio, this rehandling is avoided.

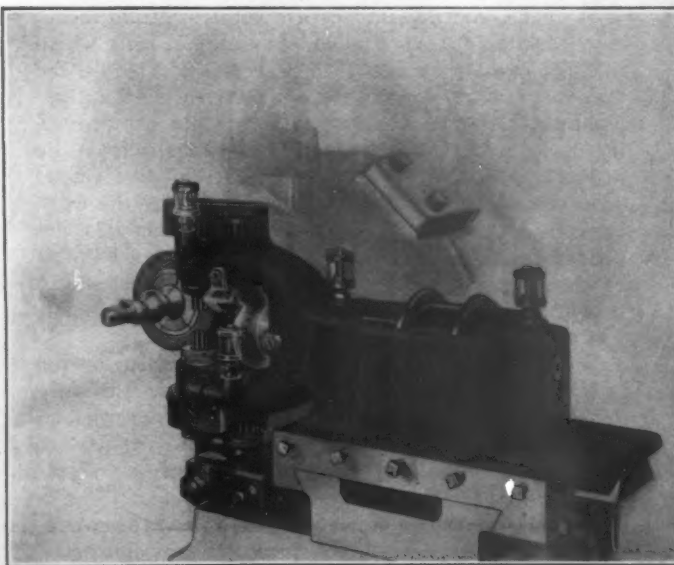


Fig. 2.

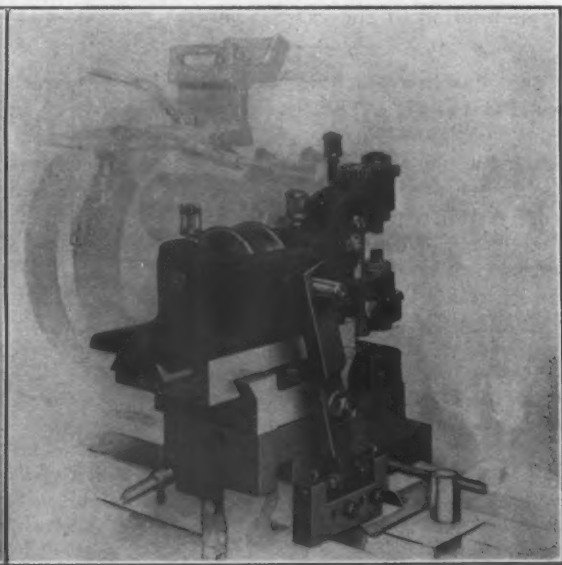


Fig. 3.

Two Views of a Milling Attachment for Screw Machines Made by the National-Acme Mfg. Company, Cleveland, Ohio.

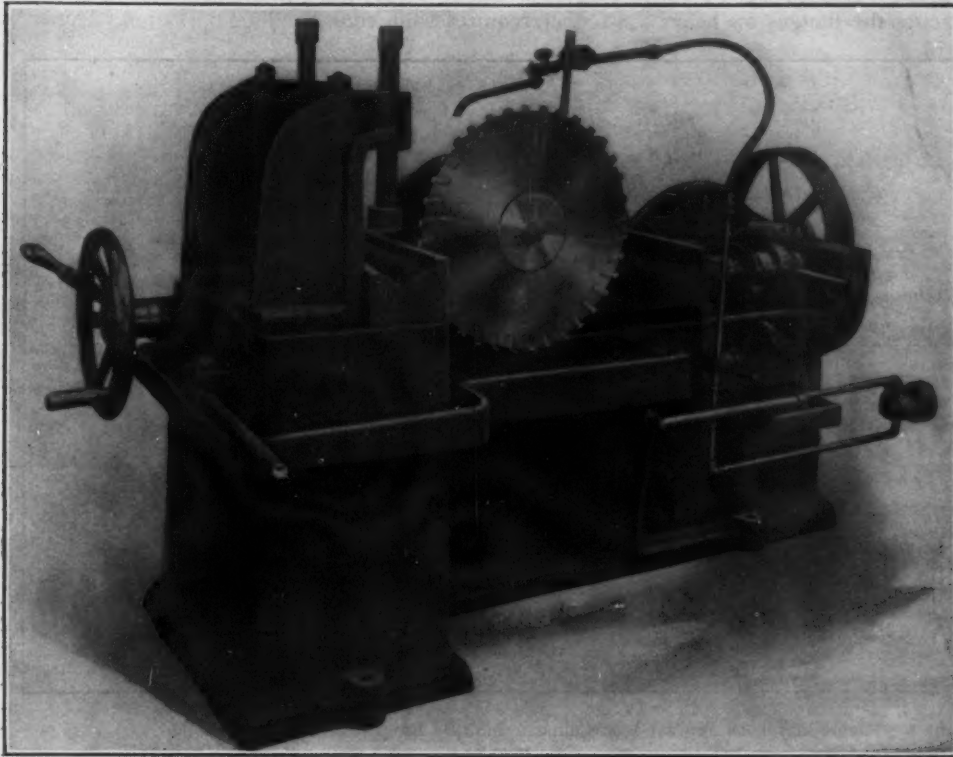
This attachment can be applied, as shown in Fig. 2, to an Acme automatic multiple spindle screw machine because of the provision for the stopping of one of the spindles in the third position which is ordinarily used in threading operations. The butt mills are fed across the piece by the cam movement which operates

### A Compact Newton Cold Saw Cutting Off Machine.

What is said to be the smallest bar cold saw cutting off machine capable of driving inserted tooth saw

blades to their maximum efficiency is being built by the Newton Machine Tool Works, Inc., Philadelphia, Pa. This machine carries a 20-in. diameter saw blade, and is capable of cutting up to 5-in. square stock and 5½-in. diameter round stock and 10-in. I-beams, on a square or miter cut in vertical position.

The machine embodies all the features of the maker's larger cold saw cutting off machines, except that it does not have a quick return to the saddle. The saw blade is bolted to the spindle and is driven by six keys in addition to the clamping bolt. The spindle is supported at each end in a capped bearing and is driven through broad face



A Bar Cold Saw Cutting-off Machine with a 20-In. Inserted-Tooth Saw Blade, Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

the cutting off tool and the auxiliary lever shown in Fig. 3. This operation takes place while the forming, milling and threading operations are in progress. As the piece has not yet been cut off, it is still held in position by the chucks while being milled.

This operation does not add to the time for making the piece, and the machine is taken care of by the regular operator with very little more attention than without the attachment. This saves the cost of re-handling and completes the piece in a much shorter time than by the old method of handling it twice. A number of these attachments have been fitted to machines of this make which cover a wide range of second operation work. As shown in the illustration, the attachment is simple and easily attached and adjusted for use, and its cost is usually very quickly saved by the elimination of the extra labor.

**The Fawcus Machine Company Now Operating Two Plants.**—The Fawcus Machine Company, with general offices in Pittsburgh, reports that its machine shop at the plant at Ford City, Pa., recently purchased, is being operated to capacity, every machine tool being used. Within a fortnight the foundry at that plant will be ready for operation. Its equipment will permit the manufacture of iron, steel and brass castings. The company expects eventually to build a line of machinery at Ford City, but is not prepared to give details at this time. Its Pittsburgh plant is being operated double turn on gears, bridge lifting machinery, &c., some important contracts having been booked.

A British firm of tube manufacturers has proposed to build a plant in Australia for the production of iron and steel tubes from imported skelp. The Australian Government is asked to give a bonus on the product and to give some protection against imports, particularly from Germany and the United States.

hammered steel gearing and worm and worm wheel. The rim of the worm wheel is a bronze ring, and the worm is hardened steel with roller thrust bearings; both are encased and run in oil.

The spindle saddle has square locked gibs cast solid with the taper shoe on the operating side to compensate for wear, and there is adjustable automatic and positive safety release to the feed, which is constant and variable in rate. All operating levers, three in number, are located in front of the machine within convenient reach. The hand wheel, controlling the saddle, is fitted to the squared end of the adjusting screw and can be removed when making angular cuts on work that would otherwise interfere.

A prominent feature of this machine is that the work table and bed are of one casting and the tee slots in the working surface are cut from solid metal. The work table is surrounded by an oil pan from which the lubricant is carried to a reservoir located in the rear of the machine, to be again returned by the usual pump to the point of cutting. Experience has proved, the designer says, that to get the best results from the inserted tooth saw blades it is necessary to have a flood of heat absorbing and lubricating fluid where the work is being performed. Other and older methods depended on the adherence of the lubricant, but as most of the lubricant flowed back into the trough before reaching the cutting point the method had to be abandoned.

These machines are arranged for belt drive or for motor drive with belt connection from the armature to the driving shaft, and all machines are furnished with provision for attaching a motor bracket at any time should it be desired. The machines are manufactured in lots of 25, warranting the use of jigs and fixtures and permitting their selling at a moderate price.

The bed is heavy and well proportioned and occupies a floor space of 3 x 4 ft. The net weight of the machine is about 4000 lb.

## The Steel Corporation's Accident Relief Plan.

A general statement covering the accident compensation which the subsidiary companies of the United States Steel Corporation have provided for their employees was given in *The Iron Age* of April 21. In view of the number of important companies now engaged in devising similar plans or in studying the subject for that purpose we give below the details of the Steel Corporation plan in full, as adopted April 15, 1910:

### Accident Relief.

1. This plan of relief is a purely voluntary provision made by the company for the benefit of employees injured and the families of employees killed in the service of the company and constitutes no contract and confers no right of action. The entire amount of money required to carry out the plan will be provided by the company with no contribution whatsoever from the employees.

2. Where the word "manager" appears in this plan of relief it means that official of the company who has charge of this relief for his company.

3. The decision of the manager of this relief shall be final with respect to all questions arising under this plan of relief, and he shall have full discretionary power in paying relief to meet any conditions which may arise and may not be covered by this statement.

4. The privilege of this relief will take effect as soon as an employee enters the service of the company, will continue so long as the plan remains in operation during such service, and will terminate when he leaves the service.

5. Payment of this relief will be made only for disablement which has been caused solely by accidents to employees during and in direct and proper connection with the performance of duties to which the employees are assigned in the service of the company, or which they are directed to perform by proper authority, or from accidents which occur in voluntarily protecting the company's property or interests. Relief will not be paid unless investigation of the causes and circumstances of the injury shows that it was accidentally inflicted and that it renders the employee unable to perform his duties in the service of the company or in any other occupation.

6. No relief will be paid for the first 10 days of disablement nor for a period longer than 52 weeks.

7. No employee will be entitled to receive relief except for the time during which the surgeon certifies that he is unable to follow his usual or any other occupation.

8. Employees will not be entitled to receive disablement relief for any time for which wages are paid them.

9. The company will provide treatment by surgeons and hospitals of its selection.

10. The company will furnish artificial limbs and trusses in cases where these are needed.

11. All men injured in the service of the company must obey the surgeon's instructions in reporting for examination, using the remedies and following the treatment prescribed, and going to the hospital if directed. No relief will be paid unless these instructions are obeyed. All employees who are disabled but not confined to the house must report in person at the surgeon's office, from time to time, as reasonably requested, and must keep any other appointments made by the surgeon.

12. All employees who wish, while disabled, to go away from their usual place of residence, must first arrange with their employing officer and with the surgeon in charge as to the absence and the evidence of continued disablement to be furnished. Such employees must report as often and in such manner as may be required of them.

13. No relief will be paid to any employee or his family if suit is brought against the company. In no case whatsoever will the company deal with an attorney or with anyone except the injured man or some member of his family in the matter of relief to be paid under this plan, because it is part of the plan that the whole amount paid shall be received by the employee and his family.

14. No relief will be paid for injuries caused or contributed to by the intoxication of the employee injured or his use of stimulants or narcotics or his taking part in any illegal or immoral acts.

15. All employees of the company who accept and receive any of this relief will be required to sign a release to the company.

### Temporary Disablement.

16. Under the terms and conditions stated here, employees shall be entitled to the following temporary disablement relief (but no relief will be paid for the first 10 days nor for longer than 52 weeks, as stated in paragraph six):

**Single Men:** Single men who have been five years or less in the service of the company shall receive 35 per cent. of the daily wages they were receiving at the time of the acci-

dent. Single men of more than five years' service shall receive an additional 2 per cent. for each year of service over five years. But in no case shall single men receive more than \$1.50 per day.

**Married Men:** Married men living with their families who have been in the service of the company five years or less shall receive 50 per cent. of the daily wages they were receiving at the time of the accident. For each additional year of service above five years 2 per cent. shall be added to the relief. For each child under 16 years 5 per cent. shall be added to the relief. But in no case shall this relief exceed \$2 per day, for married men.

### Permanent Disablement.

17. The amount of relief which will be paid to employees who have sustained some permanent disablement, such as the loss of an arm or leg, will depend upon the extent to which such disablement renders it difficult for them to obtain employment. The kinds of disablement that may occur and the extent to which each interferes with employment differ so greatly that it is impossible to provide any adequate schedule of relief which will be paid in all cases of permanent disablement. The amounts which will be paid in cases not specifically mentioned here must of necessity be left to the discretion of the manager; but it is the intention of the company that this discretion shall be so exercised in all cases as to afford substantial relief corresponding as far as possible with the amounts stated below, considering the special circumstances of each case and the character and extent of the injury.

- (a) For the loss of a hand, 12 months' wages.
- (b) For the loss of arm, 18 months' wages.
- (c) For the loss of a foot, nine months' wages.
- (d) For the loss of a leg, 12 months' wages.
- (e) For the loss of one eye, six months' wages.

### Death.

18. Relief for the families of employees killed in accidents which happen in the work of the company will be paid only where the death of the employee is shown to have resulted from an accident (or sunstroke or heat exhaustion) in the work of the company during and in direct and proper connection with the performance of duties to which the employee had been assigned in the service of the company or which he had been directed to perform by proper authority, or from accidents which occur in voluntarily protecting the company's property or interests.

19. Death relief will be paid as soon as possible after the required proof of cause of death is obtained and a satisfactory release given.

20. The company will pay reasonable funeral expenses, not to exceed \$100.

21. No relief will be paid for death caused or contributed to by the intoxication of the employee killed or his use of stimulants or narcotics or his taking part in any illegal or immoral acts.

22. No relief will be paid to the family of any employee if suit is brought against the company.

23. In no case will this relief be paid until the receipt by the company of a satisfactory release properly executed.

24. Under the terms and conditions stated here, the widows and children of the employees killed in accidents which happen in the work of the company shall be entitled to the following death relief:

In the case of married men living with their families, who have been in the service of the company five (5) years or less and leave widows or children under sixteen (16) years of age, the company will pay relief to an amount equal to 18 months' wages of the deceased employee. For each additional year of service above five years, 3 per cent. shall be added to this relief. For each child under sixteen (16) years, 10 per cent. shall be added to this relief.

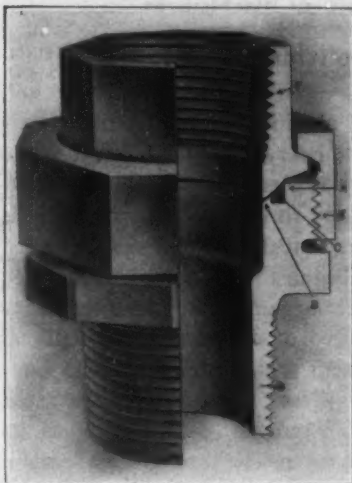
But in no case shall this death relief exceed three thousand dollars (\$3,000).

25. This plan of relief will be in operation for only one year from May 1, 1910. If the plan meets with success, it is hoped that some similar plan may be put in operation for succeeding years.

The Wheeling Corrugating Company has removed to 16 Desbrosses street, New York, and is now occupying its new fireproof building, put up expressly for its use. The building is 175 ft. deep, six stories and basement, and extends through the block to Watt street. A driveway and loading platform runs through the building, so that goods may be loaded or unloaded entirely under cover. In this new location have been concentrated the stocks and business forces heretofore located in Brooklyn and at 47 Cliff street. The company is now enabled to carry a larger and better assorted stock than was possible heretofore of galvanized and black sheets, conductor pipe, eaves trough, tin plate, zinc and galvanized steel household ware.

### A New Jefferson Union.

Like other of the products of the Jefferson Union Company, Lexington, Mass., the new style F union, with one end externally threaded, has a spherical ground brass-to-iron joint. The brass ring A, which forms the seat or contact, is firmly embedded in a channel in the part having an external thread. All the rest of the fitting is of malleable iron. The ring is



The New Style F Union, Made by the Jefferson Union Company, Lexington, Mass.

of wrought metal, cut from seamless brass tubing, avoiding the chance of blow holes likely to exist in cast brass. The brass-to-iron joint is used because it is noncorrosive. With temperature changes brass expands or contracts more than iron, introducing a tendency for an opening to be left between the two metals. The smaller the amount of brass used the less serious is this effect, and in this union only enough is used

to do the work.

The iron wall B absorbs the heat, distributing it through the iron, so that much less reaches the brass than in the usual constructions in which the brass is in direct contact with the fluid. This wall B, which is a patented feature, protects the brass from injury, no matter how far the pipe is screwed in. It makes the ring practically one piece with the iron, so that it cannot become dislodged. No gasket is used; this means a saving in time and expense. Plenty of play is allowed for the part F, which swivels in the nut, so that it is easy to make a tight connection even though the pipes are not in perfect alignment. The brass ring is cut at C to fit the spherical end of the opposing member, F. The two parts are then ground together.

The union is especially short for its type, consequently it can be used for short connections where the ordinary union and nipple would be impossible. But short as it is, any style wrench with any width face may be used on any of the three parts. The octagon flats of all three parts are so arranged that there is no interference. On the clamping nut the flats are outside, clear of the corners of the part D having the external thread. On the part D the flats are outside and clear of the nut threads E.

### Lake Superior Ore Analyses for 1909 and 1910.

The Lake Superior Iron Ore Association, Rockefeller Building, Cleveland, Ohio, has issued its annual booklet of cargo analyses of ores shipped from Lake Superior. It represents in the main the shipments of 1909; though in a number of cases the expected analyses for 1910 are given. About 40 more ores are listed than in the analysis book of 1909, the Mesaba range furnishing nearly half the increase. The Mayville ore of the Northwestern Iron Company, which is shipped by the company from Iron Ridge, Wis., to its furnaces at Mayville, is listed for the first time. Its analysis at 212 degrees is 49.53 in iron, 1.20 in phosphorus, 5.70 in silica, 0.2 in manganese, 4.84 in alumina, 4.50 in lime, 2.30 in magnesia and 0.008 in sulphur. Its iron, natural, is 44.48, the moisture amounting to 10.20 per cent. The Helen ore, Michipicoten range, which has appeared in the annual book for a number

of years, is omitted this year. The lessening of the iron content of some of the Mesaba ores that have been shipped in the past six or eight years is noticeable. The guarantee for 1910 is in a number of cases about one point less in iron than that for 1909. On the other hand, there are some cases of slight increase—from a half point to a point—but these are comparatively few.

### The First Soft Bessemer Steel Bars.

A reader of *The Iron Age* sends us the following for its bearing on the question raised by T. S. Casey in an article printed in our last issue, "Who rolled the first soft Bessemer steel bars in the United States?" It is an extract from an address by W. C. Cronmeyer before the German Engineers' Society of Pittsburgh, Pa., in the spring of 1899. It will be noted that Mr. Cronmeyer's reference is to the rolling of Bessemer bars for black plates for tinning, while Mr. Casey chronicled the rolling of Bessemer soft steel into merchant bars at Wheeling in the early eighties:

"The first use of steel for tin plate purposes was made in this country about the year 1876 at the works of the United States Iron & Tin Plate Company, at Denzler, Pa. Capt. William R. Jones was then superintendent of the Edgar Thomson Steel Works. John Cole was superintendent of the United States Works, and I was secretary and business manager of the latter. The two plants being close together we were often with each other, and experiments were made at the suggestion of Captain Jones with soft Bessemer steel, which we rolled into shovel steel, &c. Then the idea occurred to us that the same material could be used for tin plates, and after a few experiments it was carried out, Captain Jones having the steel billets made and John Cole superintending the further process of rolling them into bars and then into black plates for tinning. We met with entire success, and found that the percentage of wasters (imperfect plates) in tinning was only about 10 per cent. with steel, and even less, while with charcoal iron the wasters generally amounted to 25 per cent. The trade conditions in this country not being at that time ripe for a profitable carrying on of the industry, the use of steel plates for tin or terne plates was not continued here. About three years later, however, in 1879, English manufacturers commenced to use steel instead of iron plates in their tin plate plants. It is an interesting historical fact and one worthy of preservation that steel was used in the United States for the manufacture of tin plates at least three years prior to its use for the same purpose by English tin plate manufacturers."

### Russia Attacks Its Iron and Steel Combination.

Under date of April 15, a St. Petersburg dispatch says: "The Ministry of Commerce has undertaken an investigation of the Russian steel and iron trust, 'Prodmeti,' operating under the guise of a selling agency and controlling almost 90 per cent. of the production of structural iron, wrought and cast iron, tubular steel, &c., in Russia. An alliance with the rail syndicate gives it control also of the steel rail industry. The trust, which is financed by French and Belgian capital, evaded the provision of the Russian law requiring government sanction by incorporating abroad and conducting its business ostensibly from Paris, the various plants retaining their Russian individuality. The government believes, however, that the 'gentlemen's agreement,' under which the trust operates, can be successfully assailed."

A large consumer of non-corrosive paint for sheet metal desires to receive correspondence from concerns making this material, who should address their letters to P. O. Box 933, Pittsburgh, Pa.

# THE IRON AGE

Established in 1855.

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MECHANICAL EDITOR

## Next Week's Iron Age.

Readers of *The Iron Age* will find next week's issue different in its make-up from its predecessors. So far as the character of the contents is concerned, it will be the same paper, striving, as always, to present accurate information regarding the latest developments in the iron trade. Its make-up, however, will be so changed that the reader will feel for a time that he is perusing a new paper. The contents will be arranged in the following order:

1. Editorials.
2. The iron market reports.
3. The machinery market reports.
4. Miscellaneous reading matter.
5. Illustrated articles—plant descriptions, machinery descriptions, &c.
6. Tables of prices of iron, steel and metals from store and current prices of mill and machinists' supplies.

It is believed that such advantages will be gained by the order above outlined as to make the new arrangement speedily popular. The editorial opinions and discussions, being the direct intercourse of the paper with its readers, can very properly come first in any publication of this character. The reports on the iron market are so exceedingly important that practically no reader of *The Iron Age* ever opens his paper without turning to them; consequently they should have a prominent place. Next, the machinery reports interest so large a part of the constituency of *The Iron Age* that they are entitled to much more prominence than they have hitherto received.

In quantity and quality the illustrated articles and the miscellaneous reading matter, that have always formed so large a part of each issue, will be more a feature than ever under the new arrangement. Thus, those who look to *The Iron Age* for articles showing the most recent developments in manufacturing processes, iron and steel metallurgy, plant improvements and adaptations of machinery, will find nothing to criticise in the fact that they will hereafter see such articles in a different part of the paper.

The new make-up of the paper will further be found to have a logical correspondence with the rearrangement of the advertisements as described in another column in this issue.

A feature of the improved paper, which is by no means one of the least important, will be the presenta-

tion of current prices of mill and machinists' supplies. This addition to our usual market information will be of much value to a large class of the readers of *The Iron Age* conducting a trade as dealers in this line.

Improvements will also be made in the typographical appearance of the paper and every care will be taken to make it as attractive in this respect as it has always been in the high quality of the information presented.

## The Abolition of War.

The desire for the abolition of war is not a new impulse. It is as old as history. But while enthusiastic advocates of international peace have ever been working, both individually and through organizations, it is only within recent years that the world's public opinion has shown that it has begun to be seriously influenced by their appeals or their arguments. The Interparliamentary Union, composed of delegates from national legislative bodies of the world, and The Hague Conference, composed of direct representatives of the governments of over 40 nations, each having as its purpose the attainment of peace through arbitration, are modern developments, the first being but 21 years old and the second less than a dozen years. The former has held frequent meetings, while the outcome of the latter is The Hague Tribunal, which has already decided a number of disputes between nations that in times past would probably have led to war. These movements toward international comity gave greatly increased encouragement to the advocates of peace, and their efforts have since been redoubled, for their task is by no means ended. Since the formation of The Hague Tribunal prominent participating nations have waged most destructive warfare, while others have expressly limited its authority over them. It is therefore apparent that something more is needed to insure complete success.

The original agitation for the peace of the world was inspired by feelings of humanity. This is now, as it was then, the first important consideration. The world, however, has been progressing in scientific methods in the means of warfare as well as in other directions, and within the last 25 years the cost of armament of approved type has enormously increased, while every important nation is ceaselessly striving at vast expense to put itself on a better war footing. The expenditures for this purpose are staggering. Four countries—Great Britain, the United States, Germany and France—in one recent year spent on their armies and navies a total of close to one billion dollars, while other countries also spent huge sums. And this was a year of peace. In the fiscal year 1909 this country expended either in preparation for war or on account of past wars 72 per cent. of its revenues, exclusive of postal receipts, the Post Office Department being considered as an independent Government proposition. Mainly because of these vast expenditures for war purposes, the leading countries of the world have been unable to make both ends meet in recent years, but are struggling with deficits. The burden is becoming so great that the question whether war cannot be abolished is now appealing to the pocketbook as well as to the heart. The time has come when some powerful nation, having the respect of all other countries, but occupying such a position as to be free from all

suspicion of ulterior motives, should present a practicable plan for preserving the world's peace. That country is pre-eminently the United States. It has an opportunity now to become the benefactor of the world and the psychological moment should be embraced.

The attempts to secure the peace of the world by the voluntary action of the various nations having failed to accomplish their purpose, it seems necessary to resort to stronger measures. If three or four of the leading powers—as, for instance, Great Britain, Germany and the United States—could be persuaded to unite in a plan to compel the preservation of the peace of the world through The Hague Conference or some similar organization, it would seem highly probable that the other great powers would join them and the rest of the world would follow. This is the proposition contemplated by the following joint resolution introduced in the House of Representatives April 5 by Hon. Richard Bartholdt:

#### Joint Resolution.

To authorize the appointment of a commission to draft articles of international federation, and for other purposes.

*Whereas*, Modern means of communication now afford to the people of all nations a better understanding of their common interests than heretofore; and

*Whereas*, Such mutual understanding and its resultant sympathy between the people of all countries provide the moral basis for a citizenship of the world; and

*Whereas*, This universal citizenship requires an organ of expression and of action, to the end that it may bear proper fruit in diminishing the desolations of war and in promoting human happiness through peaceful co-operation of states; and

*Whereas*, It is deemed advisable that the Government of the United States give public expression to a form of articles of international federation which in substance may be recommended to other governments as a fitting instrument for realizing world-wide aspirations toward the amelioration of harsh conditions now suffered by multitudes, and which, in part, are due to an ever-present fear of international war;

Now, therefore, be it

*Resolved*, By the Senate and House of Representatives of the United States of America in Congress assembled, That a commission of five members be appointed by the President of the United States, the duties of such commission to be as follows:

First. To urge upon the attention of other governments the fact that relief from the heavy burden of military expenditures and from the disasters of war can best be obtained by the establishment of an international federation.

Second. To report to Congress, as soon as practicable, a draft of articles of a federation limited to the maintenance of peace, through the establishment of an international court having power to determine by decree all controversies between nations, and to enforce execution of its decrees by the arms of the federation, such arms to be provided to the federation and controlled solely by it.

Third. To consider and report upon any other means to diminish the expenditures of government for military purposes and to lessen the probabilities of war.

If this joint resolution, which presents a plan having the indorsement of peace societies and eminent publicists, should be passed by Congress, much would of course depend upon the character of those appointed members of the commission. It would be vitally essential that they should be able men, whose names and civic achievements are almost as well known abroad as at home and whose high reputation for public spirit, breadth of view, humanity, tolerance and sagacity would probably secure for them the considerate attention of every government. The proposition is by no means chimerical. We have seen how the peace of Europe has been maintained for years by the attitude of "the powers." Wars would have been far more frequent between minor European countries if warning had not been given by representatives of the leading nations that hostilities would not be permitted. The plan as applied to the world would simply mean

that, from the formation of an international federation, war between nations would not be permitted, but that they would be obliged to settle their disputes and disagreements through an international court, precisely as the citizens of any civilized country submit their grievances or disputes to a court instead of brutally fighting over them. If this can be brought about, the benefit to the world at large and to the citizens of every armed nation would be incalculable. Great sums of money now wasted in preparations for war could be diverted to useful national purposes or else oppressive taxes could be abrogated. The joint resolution should be adopted speedily. Those who favor the abolition of war, with all its horrors, its agonies, its sacrifices and its pecuniary burdens, should urge their Senators and Representatives to act promptly.

#### A Trade Union Attack on the Premium System.

The Parliamentary committee of the British Trades Union Congress has been investigating the premium bonus system and reports strongly against it. The reasons for this antagonism must recommend it to the manufacturer. Briefly, the report finds that the premium system for the most part affects engineering and collateral trades and is mostly to be found in the automobile, motor, locomotive and electrical sections of the industry, where repetition work is the rule. While there is no single instance where it has been voluntarily given up by the employers, there are numerous instances of strikes resulting from its application. The report asserts that "the operation of the system is destructive of collective bargaining and trades unionism, while it encourages disorganization. The system leads to the scamping of work. Men turn out work with a view of satisfying certain inspection tests, rather than to have examples of the best work which the skill and industry of designer and workman can produce. By destroying craftsmanship and encouraging specialization the system is harmful to industry, which, moreover, is burdened by a horde of supervising officials, whose maintenance as a non-producing class imposes a tax upon profits. Further, the system is a menace to the community at large, owing to the abnormal and continuous increase in unemployment which is directly due to its working and which is bound to become intensified as the system extends.

This report will be taken up for action by each of the various trades affected by the premium system, the apparent intention being to deal it a serious blow.

The committee's conclusions are based almost entirely upon the selfish premise that the premium system is to a certain extent antagonistic to the trade unionism exemplified by some unions. The reasons set forth are contradictory in themselves. No British employer has ever voluntarily discarded the system, because it has paid him better than the day wage system; therefore any solicitude about "a tax upon profits" is misplaced. None can dispute, moreover, that the system also pays the individual workman better in the ratio of his industry and skill. The employer and employee divide the saving in cost of production due to the active efforts of both to speed up the work. The report insinuates that quality of workmanship is lowered. The employer fixes a standard of quality to which the workman agrees and which the inspector

enforces, and that standard is determined by the requirements upon the product. A standard set by each individual workman would be an absurdity nowadays, excepting within very narrow limits.

In this era of specialization the trade union which would force employers to return to the old way of doing things would be digging the grave of the industry its members serve. Should British workmen succeed in forcing such a step backward, by just so much would they add to the advantage of their competitors in other countries.

We presume that the committee means by its reference to unemployment that the per capita production by workmen is so increased that fewer are needed to do a given amount of work. This is the silly old argument that has been brought forward by nonprogressives against every labor-saving device and method since the beginning of time. Industrial success goes hand in hand only with enterprising methods, which tend toward increased production at decreased costs. It works out in theory and in practice that average unemployment in any industry in any country is in inverse proportion to the degree of progressive enterprise. The absence of a proper spirit on the part of labor can be just as fatal to success in the markets of the world, shared by both employer and employee, as the failure of the owner to provide modern tools and methods. Unemployment will become a less serious evil as workmen learn better the importance of their own active co-operation in industrial development.

#### **The National Roll & Foundry Company's Improvements.**

The National Roll & Foundry Company, Pittsburgh, whose plant is at Avonmore, Pa., has added another 20-ton air furnace in its foundry and two new 42-in. motor-driven roll lathes of its own make in its machine shop. It is building two additional 42-in. roll lathes for its own use, and these will make a total of 11 roll lathes available for finishing rolls. It also recently installed in its power house a 100 hp. Harrisburg engine direct connected to a Westinghouse generator. Being very busy in caring for its customers' needs, the company has been hampered in making the addition to its machine shop, but expects to commence work on it soon, in order to provide a larger capacity in its finishing department.

The company states that it is arranging to build a complete line of engine, belt and motor-driven shears for scrap and for iron and steel works use, in addition to heavy roll lathes. A No. 3 belted low knife shear to cut 2 in. square is being built for the Empire Rolling Mill Company, Cleveland, Ohio. Its foundry is being operated to full capacity on rolls for sheet, tin and structural mills, the orders coming from all over the country. Its roll business for April is larger than that of any previous month in its history. A shipment of a 42-in. roll lathe is being made to the Osterberg Tin Plate Company, Waynesburg, Pa. Its contract with the American Rolling Mill Company, Middletown, Ohio, for 20 sheet mills, with the necessary rolls, is coming along satisfactorily. In addition, the company has important contracts booked for glass making machinery, one of its specialties. An additional contract for rolls, hydraulic shear, &c., for the Southern Iron & Steel Company, Gadsden, Ala., is rapidly being completed.

**Summer Courses for Engineers and Artisans at the University of Wisconsin.**—The tenth annual session

of the summer schools for engineers and artisans, under direction of the College of Engineering of the University of Wisconsin, opens June 27, continuing for six weeks. Advanced courses are offered in direct and alternating currents, hydraulics, machine design, descriptive geometry, applied mechanics, shopwork, steam and gas engineering and surveying. Elementary courses for artisans and those not having preparation for the advanced work are offered in applied electricity, engines and boilers, fuels and lubricants, mechanical drawing, machine design, materials of construction, shopwork and surveying. The teaching staff is taken from the regular instructional force, and all laboratory equipment of the engineering college is available for students. Further information can be obtained from F. E. Turneure, dean, College of Engineering, Madison, Wis.

#### **The Atlas Car & Mfg. Company's New Plant.**

The steady growth of its business having necessitated the procuring of more extensive quarters, the Atlas Car & Mfg. Company, Cleveland, Ohio, will shortly begin the erection of a modern manufacturing plant that will give it more than double its present capacity. The company will move to a new manufacturing district in the east end of Cleveland, having secured a large site, with good shipping facilities on the line of the Nickel Plate Railroad.

The main portions of the new plant will be two buildings, each 100 x 400 ft., one story. One of these will be an erecting shop and the other a machine shop and laying out building. Each will be of steel construction, with cement tile roof. A 20-ton electric crane will run through the center of each building, and there will be about 40 small cranes in the side aisles of both buildings. All of the machinery and tools will be electrically driven. Air and electric lines will be carried through the plant in conduits. In the locomotive erecting shop there will be concrete pits electrically lighted. All testing tracks will be under cover. The entire plant will be equipped with an industrial railroad, and equipment in the process of construction will be handled by storage battery locomotives and cars.

The power house will contain a gas producer plant with two units, one 300 and one 200 kw. The engines will be direct connected to the generators. The power plant will also include an air compressor plant with the necessary voltages of direct and alternating current for the testing of equipment made by the company. The power through the plant will be 60 or 25 cycle, three-phase. A vacuum heating system will be provided, the water to be heated by the exhaust from the engines. There will be a fireproof pattern house and a complete blacksmith shop, centrally located. Contracts for the plant and equipment have not yet been placed. Considerable new machine tool equipment will be needed for the machine shop.

A brick office building will be erected on Collamer street, adjoining the plant. This will be about 50 x 50 ft., three or four stories. The upper floor will be occupied by the engineering department.

The American Sheet & Tin Plate Company is installing a cooling system in its tin plate mills at South Sharon, Pa. Fans will be installed in each end of the building containing the hot mills, and by this means it is expected to lower the temperature many degrees during summer weather.

The new 600-ft. ore boat that is being built by the American Shipbuilding Company for the Jones & Laughlin Steel Company will be named William C. Moreland, in honor of the secretary of the latter company. This boat will be launched early in the fall.

# METALLURGICAL REFRACTORIES.\*

**"Thin" Lined Blast Furnaces, By-Product Coke Ovens, and Other Problems of the Fire Brick Manufacturer—Cooperation of Consumers.**

BY KENNETH SEAVER.

In considering the problems confronting the engineering in the selection of high refractories, as well as the solutions attempted, with whatever measure of success, by the manufacturer, I cannot refrain from somewhat emphasizing the importance of this class of material, inasmuch as we might say where it is at all important, it is all-important. For instance, the blast furnace, the hot blast stove and the open hearth furnace are in reality but structures of firebrick or other refractory suitably inclosed. The modern blast furnace, with its complicated and involved engineering problems, has arrived at its present comparatively highly efficient state only as its advances have been kept pace with by a proper development of the refractories used in it and its component parts. It is a far cry from the old square stone blast furnace of the earliest type to the modern steel clad monster pouring forth its enormous tonnage, and its problems, while solved for the day, may call for an entirely different solution on the morrow.

## The Problems of the Blast Furnace.

Naturally, the problems relating to high refractories are incapable of an exact and mathematical answer, and the problem of the blast furnace, for instance, the old type furnace using cold blast, required another solution with the advent of the hot blast stove; and as this was in turn succeeded by the still more modern types with greatly increased temperatures and vastly larger volumes of wind, still further development was necessary in the matter of its lining. Within the last few years the constantly growing use of the Mesaba ores and of the difficultly reducible magnetites, as well as the very refractory Cuban ores, and the increased percentage of flue dust in the furnace burden, brings new problems not only to the blast furnace engineer, but to the producers of refractory material. In general, it may be stated that the problem involves three factors, or some combination of these factors: Extreme heat as one is, of course, axiomatic, while besides this there are chemical action and mechanical or physical abrasion. In any given problem there may be one, two or all three of these factors.

It will be possibly the best method to consider some of these problems in detail, as they apply to different industrial operations in various types of furnaces. For instance, in the blast furnace the first factor, heat, varies from that of the top, which we may assume at from 400 to 600 degrees F., to that opposite the tuyeres, where it reaches approximately 3500 degrees. The chemical factor is, in this particular type of furnace, one about which comparatively little is known, and there is ample opportunity here for further investigation and experiment. It is known that, due to the action of the nitrogen of the atmosphere upon the incandescent coke, there is considerable cyanogen formed which has a decided affinity for any sodium and potassium present, forming cyanides which, in turn, as they pass upward in the furnace, are decomposed into carbonates, and it is possible that these alkaline carbonates act with the brick to form a comparatively easily fusible silicate. However, there is very little real information on this subject. It is true, at all events, that this theory may account for the fluxing

of linings at a considerably higher point in the furnace than should be normally the case.

The abrasion is, of course, most severe at the top where the stock impinges against the walls as the bell is lowered, and is severe throughout the entire furnace shaft until very near the zone of fusion.

The use of zinky ores, for instance, such as are peculiar to the Virginia fields, also introduces another problem. Even the highest grade of material, being comparatively permeable, there are deposited in it large quantities of metallic zinc from the zinky vapors. This deposit causes the brick to swell, so that enormous distortion of the furnace results, in some cases the entire stack being thrown out of line several feet. There is here the problem of manufacturing a brick which shall have requisite refractoriness and resistance to abrasion and at the same time be so unaffected by this deposition as to give a satisfactory life.

## WHY THE THIN LINED WATER COOLED FURNACE?

Still other questions are brought up by the introduction of the newest type of blast furnace with the so-called "thin" lining, the entire shell being water cooled and the lining being only 12 in. in thickness, with the exception of the bosh. Here only the highest grade of refractory, and that satisfactorily prepared, has any chance of giving proper results. This furnace lining, as you are doubtless aware, is being given very thorough trial in at least two plants in this country. The successful working of the blast furnace depends in large measure on the proper maintenance of the lines. If the lining is so thin that it gets the effect of the water cooling fully and is of such physical structure as to withstand the abrasion, there is no change in the lining and there are maintained the theoretically perfect lines with which the furnace was designed. It is a gain in regularity of operation which is the great desideratum. Of course as to just how great that gain may be few blast furnace men are yet ready to say; but such reports as there are have been remarkably satisfactory. I think that this is a fair statement. This method has been employed abroad for a number of years, but just how successfully I do not know. It is German practice, I think, adopted with some modifications possibly.

## Hot Blast Stoves.

In the hot blast stove, not only must the brick withstand the high temperatures and repeated stresses caused by the changes in such temperatures, but the markedly disintegrating action of the gases. It must also have proper physical strength to bear the weight of the superimposed mass of brickwork of 100 ft. or more. The failure to solve this latter problem has, in one instance, resulted in the necessity of shoveling out the stove complete within a year from being put in blast, whereas the successful solution may mean from 14 to 15 years' run.

## Coke Oven Fire Brick.

Each year sees a constant increase in by-product coke oven construction, and it is undoubtedly becoming one of the factors in the conservation of our coal resources. Its development is bringing up new problems. The refractories originally deemed entirely satisfactory have since been discarded by all advanced designers, and new refractories capable of withstanding higher heats and with much greater conductivity

\* From a paper read before the Engineers' Society of Western Pennsylvania, Structural Section, March 1, 1910. Mr. Seaver is connected with the Harbison-Walker Refractories Company.

are employed. The question of minimum expansion or contraction is here an all-important one, as well as the ability to withstand abrasion. The beehive oven, comparatively simple as its questions may seem, has seen and is seeing great progress as well. As a rule, the materials once employed are by no means satisfactory when viewed from the modern economic operating standpoint. This is particularly true with the use of the high volatile coals such as occur in the Klondike and other regions. The coke oven industry as a whole is one of the latest to realize fully just how important are the solutions of its problems.

Connected with this problem of beehive refractories is that of waste heat flue construction. Experiments have been conducted along these lines for a number of years, and with one of the largest coke oven operations in this country had come to such a pass that, regardless of the large saving, the feasibility of the whole scheme depended on the finding of a suitable firebrick or silica-brick which should withstand the intense heats encountered in the underground flues and at the same time avoid any difficulty from spawling. This question has apparently been satisfactorily solved and marked economies can be looked for in its adoption.

In the rotary cement kiln, the lining of which has to withstand not only the high heats and the abrasion of its charge, but the chemical action of the highly heated basic cement clinker, there are introduced secondary problems by no means unimportant in every change of mix. It is, of course, the aim that the lining should have such mechanical and chemical characteristics as shall enable it to pick up and hold a coating of clinker. Otherwise the firebrick itself would be rapidly destroyed.

In the ever recurring problem of maximum production at minimum cost, the aim has been to secure in retort gas house practice material which shall give much longer life than the old clay retorts, shall withstand higher heats and shall have increased conductivity, so that the gasifying of the coal may be done in a shorter time and at decreased fuel consumption. The results of recent tests show this problem is in at least a very fair way of solution.

#### Open Hearth and Electric Furnaces.

Although in general the type of refractories used in open hearth work has seen little change, there is constantly the search for fire clay, silica, magnesia and chrome brick which shall give even a longer life, and the relative importance of refractories in this phase of the steel industry can be readily appreciated.

The development of the electric furnace is the occasion of much research for refractories peculiarly adapted to its needs, and although the silica and magnesia brick in use in the open hearth are now employed, there is a search for other materials should they be available.

The question of a satisfactory retort for the distillation of zinc is as yet by no means solved. So near the temperature of fusion of the retort is it necessary to carry the heats in order to secure the volatilization of the zinc that there is but the narrowest factor of safety, and thus far the effect of the various oxides is such as to preclude the use of certain refractories which otherwise might give good results. Much experimentation is going on with the idea of lining clay retorts with chrome, but it is as yet too early to predict the final outcome.

#### Calcining Kilns.

Enormous developments bid fair soon to occur in certain types of calcining kilns, these kilns making available deposits of iron ore which were formerly, due to the high sulphur content, not economical to roast. In the particular type of kiln in mind there is the introduction of a muffle by which the sulphur gases are kept separate from those of the combustion gases and are employed in the manufacture of sulphuric acid.

Here the great conductivity of magnesite is the essential. This is one of the most interesting recent developments.

In addition to the three factors which in general we have already considered, there is yet a fourth which we may term the personal equation and which is yet a most vital factor—i. e., the treatment which the refractory receives at the hands of the user. In the same type of furnace a given refractory may give excellent results while operated by one, but be a complete failure in the hands of another. Knowledge and care in the operation of the furnace is all-important.

#### Co-operation of User and Manufacturer.

It will, of course, occur to you that the above brief summary is nothing more than a catalogue of a number of such industrial plants as are users of refractories, but this brings out exactly the point which I would emphasize—i. e., that practically all these problems are in a measure solved, but not necessarily permanently solved, and that there is a constant reaching out for a better solution for each one.

There is yet another problem which we have not mentioned, and that is the problem of the education of the user of refractories to an appreciation of what quality means and to a realization that cost must be figured on tonnage output and not on the original price per thousand. In numberless instances the solution of refractory problems is but a question of bringing the consumer to realize that there is at hand a remedy for his troubles if he will but avail himself of it.

That the progressive manufacturer is seeking to the best of his ability a solution of these problems is evidenced by the increasing amounts expended for research along all lines which may seem to bear upon it, and the discussion of these problems in the literature of to-day is undoubtedly having a great and beneficial effect. Undoubtedly one reason for the comparatively slow adoption by the consumer of certain grades of firebrick and silica brick has been due to the lack of information of the manufacturer as to the exact conditions to be fulfilled. This has been due in a measure possibly to a lack of initiative on the part of the latter and also to a mistaken policy of secrecy on the part of the former; but this day is passing, and there is coming to be between the producer and user a full realization that only by the heartiest co-operation and exchange of ideas can there be an efficient and satisfactory solution of the problems involved.

**Keeping Shop Records of Belting.**—The average machine shop buys a large amount of belting each year, which is chopped up and put on various machines throughout its plant as belting gives out. Few plants keep any record of the actual length of service of the belts on any particular machine. At the end of a year's time it is not definitely known whether the belt equipment for the various kinds of machinery in the shop has cost more than it should or not. It is believed that machine shops generally will be interested in a plan of keeping shop records which have just been brought out by the engineers of the New York Leather Belting Company, 51 Beekman street, New York City. Charts have been printed for free distribution, which can be tacked up on every floor in a factory, and, by merely filling in certain blanks, entailing little or no trouble, at the end of the year the exact record of belts on every machine on that floor can be absolutely checked up.

The William B. Scaife & Sons Company, Pittsburgh, has issued a pamphlet for general distribution entitled "Water Purification Facts for Steam Users," by J. C. Wm. Greth, engineer for the company, being a paper read by him before the Rochester Engineers' Club, Rochester, N. Y., February 25, 1910.

### The Iron and Steel Institute.

The annual meeting of the Iron and Steel Institute will be held at the Institution of Civil Engineers, Westminster, London, Wednesday and Thursday, May 4 and 5. At the opening session the former president, Sir Hugh Bell, will induct into the chair the president-elect, the Duke of Devonshire, who will deliver his inaugural address. The Bessemer gold medal for 1910 will be presented to E. H. Saniter at the same session. The awards of the Carnegie Research Scholarships for 1910 will also be announced. The following papers have been prepared for the meeting:

"The Chemical and Mechanical Relations of Iron, Manganese and Carbon," by J. O. Arnold and A. A. Read.

"The Gird Furnace and the Electric Smelting Works of the Paul Gird System," by Dr. W. Borchers.

"The Progress of Electro-Smelting," by Donald F. Campbell.

"Some Recent Investigations on Case Hardening," by Sydney A. Grayson.

"The Cutting Properties of Tool Steel," by E. G. Herbert.

"The Crystallography of the Iron-Carbon System," by V. A. Kroll, Jr.

"The Constitution of Cast Irons and Carbon Steels from the Practical Standpoint," by D. M. Levy.

"Some Physical Properties of Two Per Cent. Chromium Steels," by Prof. Andrew McWilliam and E. J. Barnes.

"The A2 Critical Point in Chromium Steel," by Harold Moore.

"The Economy and Design of Modern Reversing Rolling Mill Steam Engines," by Eduard G. Sehmer and Dr. Rudolf Drawe.

"Developments in the Production of Electric Power: Its Application and Bearing Upon the Iron and Steel Industries," by D. Selby-Bigge.

"The Elastic Breakdown of Certain Steels," by Prof. C. A. M. Smith.

"The Homogeneity of Metals," by G. Tagayeff.

The autumn meeting of the Institute will be held at Buxton, Derbyshire, England, September 27, 28 and 29.

**Captain Godfrey L. Carden's Reports.**—The Department of Commerce and Labor, Bureau of Manufactures, Washington, D. C., has issued a book of 180 pages, giving the complete series of reports by Captain Carden on the machine tool trade in Austria-Hungary, Denmark, Russia and Netherlands, with supplementary reports on Italy and France, which appeared from time to time in the *Consular Reports*. The publication of the series in this form is a convenience which will be highly appreciated by the machine tool trade. Two reports similar in character which were previously submitted by Captain Carden have been published, the first of which dealt with Germany, France, Switzerland, Italy and the United Kingdom, and the second with Belgium. This third report completes his investigations in the European field.

**Increase in Idle Cars.**—Due largely to the coal strike, the number of idle freight cars in the United States and Canada increased greatly in the two weeks ending April 13. The net surplus on that date was 77,357, against 25,886 on March 30. The coal car surplus was 40,857, a gain of 33,457. Box cars increased from 15,834 to 20,527.

The Robeson Iron Company's furnace, at Robeson, Pa., of which S. B. Patterson is superintendent, recently made a run of 154 consecutive casts of iron with sulphur under 0.050 per cent., in detail as follows:

Tons.	Per cent.	Sulphur.
173	3.4.....	0.041 to 0.050
556	11.....	0.031 to 0.040
2,668	52.9.....	0.021 to 0.030
1,647	32.7.....	0.020 and under.
5,044	100.0	

The phosphorus varied from 0.029 to 0.037 per cent., and the silicon from 1.72 to 4.63. Roasted Cornwall ore exclusively was used, yielding 45 per cent. metallic iron, and containing nearly 1 per cent. sulphur after roasting.

### British Foreign Trade in Iron and Steel Increasing.

The statement of British imports and exports of iron and steel for the first three months of 1910 shows that the total exports, excluding iron ore, were 1,148,301 gross tons, against 970,910 tons in the first three months of 1909. The values were £10,272,569 and £9,034,721, respectively. The March exports were 386,838 tons this year and 376,208 tons in 1909. Rail exports show a falling off for the quarter, having been 110,259 tons, against 144,378 tons in the first quarter of 1909. Rail exports to the Argentine were 28,181 tons in the first three months of this year, against 46,916 tons in the same months of 1909. The galvanized sheet trade made a marked gain, the total exports having been 162,002 tons this year to March 31, or nearly 44,000 tons more than in the first three months of 1909.

British iron and steel imports in the first quarter of 1910 amounted to 333,512 tons, against 281,069 tons in the first three months of 1909. Steel billets and slabs show a falling off of 30,000 tons from 103,000 tons in the first quarter of last year, while sheet and tin plate bars show an increase of 20,000 tons, or to 54,000 tons. Other marked increases were in plates, wire rods and scrap. The imports of iron ore for the first quarter in 1910 were 1,797,292 tons, against 1,363,012 tons in the first quarter of 1909.

**Dominion Steel & Coal Corporation.**—For the merger of the Dominion Iron & Steel Company, Sydney, Nova Scotia, and the Dominion Coal Company a holding company has been formed, to be known as the Dominion Steel & Coal Corporation. The holding company will issue its stock in exchange for the common stock of the Dominion Iron & Steel Company and Dominion Coal Company, share for share at par, with a cash bonus of \$4 a share, to be paid in four quarterly installments, the first payment of \$1 per share to be made on July 1 next. The proposal, in other words, is that the stocks of the two companies shall enter the combine on equal terms. The payment of \$4 a share is equivalent to a dividend of 4 per cent. for the year on the common stock of each. The new company will also issue preferred stock for the preferred issues of the two companies, share for share.

Announcement of the formal consolidation of the Alan Wood Iron & Steel Company and Richard Heckscher & Sons Company, with headquarters in Philadelphia, Pa., is made under the name of the Alan Wood Iron & Steel Company, with a capital of \$7,000,000. It is stated that while an additional blast furnace and extensions to the steel plant have been considered, and may ultimately be decided upon, nothing beyond the equipment of the plants necessary to facilitate the use of liquid metal in the manufacture of steel will be undertaken at this time.

The Lukens Iron & Steel Company, Coatesville, Pa., the first maker of boiler plates in America, is arranging to fittingly celebrate the one hundredth anniversary of the establishment of its business. July 2 will be the date of the celebration, as it was on that date in 1810 that the deeds for the company's present location were signed.

The Magnolia Metal Company, on May 1 will remove its Canadian branch from 31 St. Nicholas street, Montreal, to its new office and factory at 223 St. Ambrose street, the building having been constructed for its special requirements and growing Canadian business.

## PERSONAL.

John Birkinbine, Philadelphia, has gone to Mexico on a professional trip.

Dwight E. Woodbridge, Duluth, Minn., who has been in Mexico for some weeks, sailed from New York Saturday, expecting to be abroad until July.

W. F. LaBonta, for 20 years purchasing agent of the Chesapeake & Ohio Railway Company, resigned that position January 1 to enter the railroad supply field, and on March 1 accepted the position of representative of the Union Spring & Mfg. Company, with office in the American National Bank Building, Richmond, Va.

Effective May 1, Neil E. Salsich has been appointed sales agent in charge of the sales office of the Pennsylvania Steel Company and Maryland Steel Company, at Steelton, Pa., in place of William C. Cuntz, resigned.

Samuel M. Curwen has been elected president of the Wason Mfg. Company, Springfield, Mass., succeeding Henry Pearson, resigned. Mr. Curwen is vice-president and general manager of the J. G. Brill Company, Philadelphia, and is president of the G. C. Kuhlman Car Company, Cleveland; of the American Car Company, St. Louis; of the Danville Car Company, Danville, Ill., and vice-president of the John Stephenson Company, Elizabeth, N. J. He has been vice-president of the Wason Company. C. F. Rice has been promoted from superintendent to works manager of the Wason Company. He had held the former office for three years and has been connected with the business for 25 years.

A number of important transfers in its New England official force have been announced by the American Steel & Wire Company. S. M. Rogers, who has been superintendent of the North Works, Worcester, Mass., has been promoted to the staff of the general manager at Pittsburgh, Pa. John Wheeldon, superintendent of the plant at New Haven, Conn., will succeed Mr. Rogers at Worcester, and L. E. Booth, assistant superintendent of the North Works, will take Mr. Wheeldon's position at New Haven. A. E. Smith is promoted from superintendent of the flat wire department to assistant superintendent of the North Works, and L. A. Jacobs has been made superintendent of the flat wire department.

Clarence W. Hobbs, president of the Hobbs Mfg. Company, Worcester, Mass., has returned from a business trip to Germany.

Sir Joseph Jonas of Jonas & Colver, Ltd., Sheffield, England, manufacturers of tool steels, is now in the United States.

E. W. Donahoe, formerly purchasing agent of the American Steel & Wire Company, at Chicago, was in Pittsburgh last week, and he will shortly locate in that city with one of the large steel companies.

George F. Baer, president of the Philadelphia & Reading Railway Company, has been elected a voting trustee of the Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia, succeeding Richard H. Rushton, deceased.

W. S. Pilling of Pilling & Crane, Philadelphia, Pa., returned April 25 from a foreign trip of several months.

E. S. Jackman & Co., 710 to 714 Lake street, Chicago, agents of the Firth-Sterling Steel Company, have transferred A. E. Barker from the Chicago headquarters to Birmingham, Ala. This will enable him to give his entire time to the requirements of customers in the States of Alabama, Mississippi, Louisiana and Tennessee.

L. R. Meisenhelter, formerly connected with the Vanduyck-Churchill Company, and well known in the machine tool trade, has accepted the position of man-

ager of the National Hartel Light Company, Philadelphia.

R. A. Brown, long associated with the Joseph Dixon Crucible Company, has severed that connection to engage with the Jonathan Bartley Crucible Company, Trenton, N. J. Mr. Brown is now on his way to South Africa, and will extend his trip to cover other distant sections of the globe.

William Mann of Pittsburgh has been appointed general manager of the mills of the American Steel & Wire Company, at Anderson, Ind., succeeding Charles Gauss, who retired recently.

## Drawback Allowances Granted.

The Treasury Department announces that regulations have been issued for the allowance of drawback on exported armor plate manufactured by the Bethlehem Steel Company, South Bethlehem, Pa., from imported iron ore, ferromanganese and ferrosilicon by the open hearth process, in accordance with sworn statements dated February 21, 1910, and March 18, 1910, and steel ingots, blooms, billets, bars, rails, plates, structural material, castings, forgings, guns, gun mounts, projectiles, machinery and armor plate manufactured by said company, either in whole or in part, from imported pig iron or scrap iron or steel, and imported ferromanganese and ferrosilicon, in accordance with said sworn statements. In liquidation, the allowance shall not exceed for each ton of finished product 0.0082 ton of ferromanganese, 0.004 ton of ferrosilicon and 1.05 tons of imported pig iron or scrap iron.

On the exportation of locomotives built by the Baldwin Locomotive Works, Philadelphia, Pa., in the construction of which imported steel tubes are used, the drawback will be allowed on the imported material. The drawback entry must show the number of locomotives exported and the number of steel tubes used in each and in the entire shipment, giving the dimensions of the tubes and describing the same as described in the import invoice or invoices. In liquidation, the quantity of imported steel tubes which may be taken as the basis for the allowance of drawback may equal that declared in the drawback entry after official verification of exported quantities.

**A Quarter Century Club at the Dodge Works.**—A Quarter Century Club, the membership of which is limited to men who have been active factory workers for 25 years, being an organization out of the ordinary, exists at the plant of the Dodge Mfg. Company, Mishawaka, Ind. Although barely one year old it is as full of life as the Dodge Club, made up of all employees. In the days when this widely known engineering concern was struggling to get its split wood pulley on the market, regular paydays were few and far apart. The men had faith, however, and stuck. Twenty-five years ago there were 116 on the payroll; one year later this was reduced to 51. Fourteen of these have died in the harness and 27 are still on the job. W. B. Hosford, the first vice-president, has spent all his business life with the company, starting in at the bottom and climbing to his present position by merit alone. Charles Endlich, secretary and treasurer, and W. J. Chesbro, superintendent of the wood shops, are also pioneers in service.

The United States torpedo boat destroyer Mayrant was launched April 23 by the William Cramp & Sons Ship & Engine Building Company, Philadelphia. The vessel must make 30 knots per hour to equal contract speed. The Mayrant is the third to be launched of a series of five destroyers being built for the Government at the Cramp shipyard.

## OBITUARY.

JOHN E. WAKEFIELD, Worcester, Mass., well known as a manufacturer of wrenches, died April 20, aged 61 years. He was a native of Monmouth, Me., and went to Worcester when he was 21 years old and entered the employ of E. W. Vaille, manufacturer of chairs. The company made a specialty of folding chairs and Mr. Wakefield was active in the development of the line, and for 15 years was superintendent of the factory. With the advent of the bicycle he saw the opportunity for a wrench which would serve the wheelman and his idea proved a marked success. The automobile was another opportunity for his genius, and he designed and brought into prominence a line of wrenches for this trade. He leaves a widow and a son, Clarence E. Wakefield, who is associated in the wrench business.

FRANCIS J. PLUMMER, Norwich, Conn., died April 15, aged 69 years. He was engaged in the metal industry all of his business life, serving an apprenticeship as a machinist in Worcester, Mass., whence he went to Boston and was later made superintendent of the shops of the S. A. Woods Machine Company, builder of woodworking machinery. In 1890 he went to Norwich as manager and superintendent of the C. B. Rogers Machine Company, woodworking machinery, and remained with that company until three years ago. He served three years in the Union army during the Civil War. He was a member of the American Society of Mechanical Engineers. He leaves a widow, three sons and two daughters.

JAMES J. CONNELL, general superintendent of the plant of the Link-Belt Company, Nicetown, Philadelphia, Pa., died suddenly April 18 from typhoid fever, aged 39 years. He had been connected with the company for over 16 years, entering its employ as a structural steel worker. He leaves a widow and two children.

### The Jones & Laughlin Steel Company.

The annual meeting of stockholders of the Jones & Laughlin Steel Company was held in Pittsburgh April 26. All the officers and directors were re-elected. W. H. Lewis, general superintendent of the new plant at Aliquippa, Pa., and R. B. Kernohan, assistant to the general manager, were added to the board.

About May 1 the company will start to dismantle No. 1 Eliza Furnace at Pittsburgh. The stack was built originally in 1888-1889, and was blown in during May of the latter year. It was enlarged in 1893, partly dismantled in 1900 and remodeled in 1901. Since that time the furnace has made a total of 1,331,000 tons of pig iron, an extraordinary record. All the work of rebuilding the furnace will be done by the company itself, and the remodeled stack will have new foundations, a shell 1 in. thick, a new down comer and new hot blast stoves. It is expected to be ready for blast again about the middle of October.

The Case Crane Company, Columbus, Ohio, has been reorganized, with a nominal capital of \$10,000, and will take over the present Case Crane Company with shops on Curtiss avenue. It will build electric hand power cranes, hoists, grab bucket machinery, derricks, &c. E. K. Stewart is president; S. S. Waite, vice-president; H. T. Stewart, secretary, and J. H. Roys, treasurer.

Baker & Hamilton, hardware and agricultural implements, with headquarters in San Francisco, announce that after May 1 their Eastern office will be at 45 Broadway, New York. Chas. D. Graham is New York representative.

### United States Steel Corporation's Earnings.

The statement of the United States Steel Corporation's earnings for the quarter ending March 31, 1910, makes the following showing, as compared with the corresponding period of 1909:

	1910.	1909.
January .....	\$11,316,014	\$7,262,605
February .....	11,616,861	7,669,336
March .....	14,684,001	7,989,327
Total after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, and interest on bonds and fixed charges of the subsidiary companies.....	\$37,616,876	\$22,921,268
Less charges and appropriations for the following purposes:		
Sinking funds on bonds of subsidiary companies .....	\$284,450	\$272,333
Depreciation and reserve funds.....	5,829,232	3,493,666
	\$6,113,682	\$3,736,199
Net earnings.....	\$31,503,194	\$19,185,069
Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding .....	\$5,876,612	\$5,939,206
Sinking funds for the quarter on U. S. Steel Corporation bonds:		
Installments .....	1,012,500	1,012,500
Interest on bonds in sinking funds.	422,851	360,255
	\$7,311,963	\$7,311,963
Balance.....	\$24,191,231	\$11,873,106
Dividends for the quarter:		
Preferred, 1% per cent.....	\$6,304,919	\$6,304,919
Common, 1% per cent, 1910, 1/2 per cent, 1909.....	6,353,781	2,541,513
Surplus for the quarter.....	\$11,532,531	\$3,026,674
Appropriated for new plants, construction, &c.....	5,000,000	
Balance of surplus for the quarter.	\$6,532,531	\$3,026,674
	Tons.	Tons.
Unfilled orders on hand, March 31.....	5,402,514	3,542,595

The earnings for the quarter ending December 31, 1909, were \$40,982,746. The unfilled orders on hand at the close of that quarter aggregated 5,927,031 tons.

The following statement to the Board of Directors by Chairman E. H. Gary was also made public:

The Finance Committee recommends to the Board of Directors the declaration of a dividend of 1 1/4 per cent. for the quarter ending April 1. During the nine years of the existence of the corporation ending April 1, 1910, the net earnings of all companies, over and above all interest charges and dividends at the rate of 7 per cent. on the preferred stock of the corporation, have averaged about 8 1/2 per cent. per annum on the common stock, while the dividends actually paid on the common stock have averaged only 23-10 per cent.

In view of the earnings, many of the holders of common stock from time to time have requested more liberal dividends; but the members of the Finance Committee have acted on the belief that the interests of the holders of common stock would be best protected and promoted by the use of large sums of money in extending and fortifying the properties and business of the companies, and large amounts have been used for this purpose which otherwise would have been available for dividends. This policy has been approved by the board.

It is now believed conditions justify an increase of the dividends on the common stock to the rate of 5 per cent. As the membership of the Finance Committee and of the Board of Directors may change from time to time, no policy for the future can be fixed; but it is the opinion of the present members of the Finance Committee that if and when hereafter earnings will justify further increases in distributions they should be declared in the shape of extra dividends.

The Empire Engine & Machinery Company, 220 Broadway, New York, has secured contract from the Anniston Iron Corporation, Anniston, Ala., for two high pressure vertical type blast furnace blowing engines, 44-in. steam cylinder, 84-in. air cylinder, 60-in. stroke, about 700-hp. each. These engines will be built by the Allis-Chalmers Company at its Milwaukee plant.

# THE IRON AND METAL MARKETS

## Pig Iron Curtailment Under Way.

### Two Export Rail Orders Taken, but Generally the Finished Material Market Is Quiet.

Interest naturally centers in the movement to reduce pig iron output and surplus stocks. In the East one New Jersey and four Pennsylvania furnaces are preparing to blow out. Being of less than modern caliber, they represent about 1000 tons a day. One Buffalo Union furnace blew out to-day. In Ohio three furnaces have gone out, one at Columbus, one in the Hanging Rock district, and one at Toledo, and two in the Mahoning Valley will follow next week. At a meeting of Mahoning and Shenango Valley furnace companies last week it was agreed that the large accumulations in those districts call for sharp restriction. It is proposed that the merchant furnaces there bank for 30 days between now and July 1. The pig iron output of some of the steel companies has also been reduced. No statistical measure of the curtailment thus far will be possible until the compilation of the blast furnace statistics of next week.

Meantime the pig iron market is quieter. Consumers who have predicted a further settling of prices are still waiting, while it is admitted that the adjustment of supply to consumption may now proceed rapidly. At \$12, Birmingham, for No. 2 Southern iron, more resistance appears to efforts to depress the market, though at that price there are free offers of iron for any delivery this year.

A purchase of 4000 tons for a stove works, reported from Chicago, 1500 tons of Southern and 2500 tons of Northern iron, is the largest transaction of the week. The amount taken at Cincinnati by a large pipe interest, referred to last week, is now believed to have been 10,000 to 15,000 tons, or less than at first reported.

In steel making pig iron prices have settled further. Bessemer iron can now be had at \$17, at Valley furnace, and basic iron at \$15.75.

The blowing out of furnaces is calling for more drastic action by the coke producers. In the Upper and Lower Connellsville districts the list of active ovens has been reduced by 3000 in the past two weeks and output is now about 100,000 tons a week less than at the close of March.

Ferromanganese has been more active, but at lower prices. Dealers who are now asked to specify on contracts made last fall are offering ferro at \$40.50, Baltimore.

While Bessemer steel billets are still selling at the lower prices recently established, open hearth steel is firm and scarce.

In finished iron and steel the week has been generally uneventful. It is evident that the crops will be a foremost factor in iron trade calculations for many weeks. Trustworthy advices indicate that some recent reports of damage to the more important crops have been exaggerated.

Some interpreters have found in the new 5 per cent. dividend rate for the Steel Corporation's common stock a clean bill of health for the steel trade of 1910. It is rather an indication that there will not soon be a duplication of the enormous outlays of recent years for "extending and fortifying the properties and business of the companies."

The export rail trade has made up for the lack of domestic demand, the contracts of the week including 18,000 tons for the New South Wales Government, taken by the Steel Corporation, and 10,000 tons for the National Railways of Mexico, which will be furnished by the Maryland Steel Company.

Railroads are not closing for bridge work with the promptness expected. Car orders have been few, but

this may be due in part to the fact that on steel cars deliveries cannot now be had before September. Locomotive orders, however, have been heavy of late.

Of structural contracts pending the largest is for 7000 tons for the Bankers' Trust Company Building, New York. The Jones & Laughlin Steel Company will furnish 6000 tons for the Merchants' and Manufacturers' Exchange buildings at the New York Central terminal, New York, and the American Bridge Company 3200 tons. Contracts for 5,000 tons of steel for transmission towers have recently been closed in New York.

The sold up condition of the steel bar mills is not promising for the special concession the plow manufacturers are seeking on their new contracts. The mills appear to be holding firmly at 1.45c.

Copper and other metals are weaker. Electrolytic copper, with light buying, is quoted at 12 $\frac{3}{4}$ c., and lake at 13c. to 13 $\frac{1}{4}$ c. Under speculative selling pig tin declined from 33.30c. to 32.80c. in the past week.

## A Comparison of Prices.

### Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

Apr. 27, Apr. 20, Mar. 30, Apr. 28, 1910. 1910. 1910. 1909.

#### PIG IRON, Per Gross Ton:

Foundry No. 2, standard, Philadelphia .....	\$17.50	\$17.75	\$18.00	\$16.00
Foundry No. 2, Southern, Cincinnati .....	15.2	15.25	15.75	14.25
Foundry No. 2, local, Chicago ..	17.25	17.25	18.00	16.50
Basic, delivered, eastern Pa. ....	17.50	17.50	17.75	15.00
Basic, Valley furnace .....	15.75	16.00	16.00	14.00
Bessemer, Pittsburgh .....	17.90	18.40	18.40	15.65
Gray forge, Pittsburgh .....	15.90	16.15	16.15	14.40
Lake Superior charcoal, Chicago	19.00	19.00	19.00	19.50

#### BILLETS, &c., Per Gross Ton:

Bessemer billets, Pittsburgh ..	26.50	26.50	27.50	23.00
Forging billets, Pittsburgh ..	32.00	32.00	32.00	25.00
Open hearth billets, Philadelphia	30.00	30.00	30.60	25.40
Wire rods, Pittsburgh .....	32.00	32.00	33.00	29.00
Steel rails, heavy, at mill .....	28.00	28.00	28.00	28.00

#### OLD MATERIAL, Per Gross Ton:

Steel rails, melting, Chicago ..	16.25	16.25	17.00	13.50
Steel rails, melting, Philadelphia	15.75	16.00	16.50	14.00
Iron rails, Chicago .....	18.50	18.50	19.00	16.50
Iron rails, Philadelphia .....	20.50	20.50	20.50	17.00
Car wheels, Chicago .....	16.00	16.50	17.00	14.50
Car wheels, Philadelphia .....	15.50	16.00	16.75	14.00
Heavy steel scrap, Pittsburgh ..	15.75	16.25	17.00	14.25
Heavy steel scrap, Chicago .....	14.25	14.25	15.00	12.75
Heavy steel scrap, Philadelphia.	15.75	16.00	16.50	13.50

#### FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia.	1.50	1.50	1.55	1.35
Common iron bars, Chicago ..	1.50	1.50	1.55	1.25
Common iron bars, Pittsburgh ..	1.60	1.60	1.65	1.30
Steel bars, tidewater, New York	1.61	1.61	1.61	1.31
Steel bars, Pittsburgh .....	1.45	1.45	1.45	1.15
Tank plates, tidewater, New York	1.71	1.71	1.71	1.41
Tank plates, Pittsburgh .....	1.55	1.55	1.55	1.25
Beams, tidewater, New York ..	1.66	1.66	1.66	1.41
Beams, Pittsburgh .....	1.50	1.50	1.50	1.25
Angles, tidewater, New York ..	1.66	1.66	1.66	1.41
Angles, Pittsburgh .....	1.50	1.50	1.50	1.25
Skelp, grooved steel, Pittsburgh.	1.50	1.50	1.50	1.20
Skelp, sheared steel, Pittsburgh.	1.60	1.60	1.60	1.30

#### SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.40	2.40	2.40	2.20
Wire nails, Pittsburgh .....	1.85	1.85	1.85	1.80
Cut nails, Pittsburgh .....	1.85	1.85	1.85	1.70
Barb wire, galv., Pittsburgh ..	2.15	2.15	2.15	2.25

#### METALS, Per Pound:

Cents.	Cents.	Cents.	Cents.
Lake copper, New York .....	13.25	13.25	12.87 $\frac{1}{2}$
Electrolytic copper, New York ..	12.75	12.80	12.25
Spelter, New York .....	5.60	5.60	5.65
Spelter, St. Louis .....	5.45	5.45	5.50
Lead, New York .....	4.40	4.40	4.40
Lead, St. Louis .....	4.25	4.25	4.25
Tin, New York .....	32.90	33.05	33.25
Antimony, Hallett, New York ..	8.25	8.25	8.25
Nickel, New York .....	45.00	45.00	45.00
Tin plate, 100 lb., New York ..	\$3.84	\$3.84	\$3.84

\* These prices are for largest lots to jobbers.

## Prices of Finished Iron and Steel f.o.b. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Structural Shapes.**—I-beams and channels, 3 to 15 in., inclusive, 1.50c. to 1.55c., net; I-beams over 15 in., 1.65c., net; H-beams over 8 in., 1.75c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; angles over 6 in., 1.65c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.75c., base, half extras, steel bar card; tees, 3 in. and up, 1.65c., net; zees, 3 in. and up, 1.60c., net; angles, channels and tees, under 3 in., 1.50c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

**Plates.**—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.55c. to 1.60c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼ in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼ in. to and including 3-16 in. on thinnest edge.....	\$0.10
Gauges under 3-16 in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
Gauges under No. 9 to and including No. 10.....	.30
Gauges under No. 10 to and including No. 12.....	.40
Sketches (including all straight taper plates), 3 ft. and over in length.....	.10
Complete circles, 3 ft. diameter and over.....	.20
Boiler and flange steel.....	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.....	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive.....	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive.....	.50
Cutting to lengths or diameters under 1 ft.....	1.55
No charge for cutting rectangular plates to lengths 3 ft. and over.	

**TERMS.**—Net cash 30 days.

**Sheets.**—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Black annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 and 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, \$1.70 per square. Galvanized roofing sheets, No. 28, \$3 per square, for 2½-in. corrugations.

**Wrought Pipe.**—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe which went into effect January 1:

	Steel.	Iron.
	Black. Galv.	Black. Galv.
½ and ¾ in.....	70	65
¾ in.....	71	66
1 in.....	74	69
1½ to 6 in.....	78	73
7 to 12 in.....	72	67
Plugged and Reamed.		
1 to 4 in.....	76	71
Extra Strong, Plain Ends.		
½ to ¾ in.....	63	58
¾ to 1 in.....	70	65
1½ to 8 in.....	66	61
9, 10, 11 and 12 in.....	54	42
Double Extra Strong, Plain Ends.		
½ to 8 in.....	59	54

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

**Boiler Tubes.**—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in.....	49	43
1½ to 2½ in.....	61	43
2½ in.....	63	48
2½ to 5 in.....	69	55
6 to 13 in.....	61	43
2½ in. and smaller, over 18 ft., 10 per cent. net extra.		
2½ in. and larger, over 22 ft., 10 per cent. net extra.		

Less than carloads to destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

**Wire Rods.**—Bessemer, open hearth and chain rods, \$32.

**Steel Rivets.**—Structural rivets, ¼ in. and larger, 2.15c., base; cone head boiler rivets, ¼ in. and larger, 2.25c., base; ½ in. and 11-16 in. take an advance of 15c., and ¾ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b., mill. The above prices are absolutely minimum on contracts for large lots, makers charging the usual advances of \$2 to \$3 a ton to the small trade.

## Pittsburgh.

PARK BUILDING, April 27, 1910.—(By Telegraph.)

**Pig Iron.**—The movement to restrict output has commenced in earnest. Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, will go out this week for about 30 days, while Grace Furnace of the Brier Hill Iron & Coal Company, Youngstown, will likely go out next week for a similar time. So far, none of the Pittsburgh blast furnaces has been blown out, except No. 1 Eliza of the Jones & Laughlin Steel Company, which will be entirely rebuilt. Inquiries for pig iron are only for small lots for prompt shipment, consumers believing that prices will be lower. In the absence of sales, the market is hard to quote. Bessemer iron is nominally held at \$17.25, Valley furnace, with the probability that \$17 could be done on a firm offer. Basic is about \$15.75; No. 2 foundry, \$15.50 to \$15.75, and gray forge, \$15, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

**Steel.**—There is not much inquiry, consumers being pretty well covered. In some cases shipments have been held up. Prices on Bessemer steel continue weak, but on open hearth are very firm. We quote Bessemer 4 x 4 in. billets at \$26.50 to \$27; Bessemer sheet bars, \$27.50 to \$28; 4 x 4 in. open hearth billets, \$28.50 to \$29; open hearth small billets, \$30 to \$30.50; open hearth sheet and tin bars, \$28.50 to \$29, and forging billets, \$32 to \$33, Pittsburgh.

**Ferroalloys.**—Sales of 80 per cent. foreign ferromanganese, aggregating 2000 tons or more, have been made at about \$41, Baltimore, deliveries to run over the last half. A Shenango Valley consumer has bought about 500 tons of 50 per cent. ferrosilicon for delivery over last half at a price equal to about \$60, f.o.b. Pittsburgh. A sale is also reported of about 300 tons of 50 per cent. ferrosilicon for prompt shipment at a price equal to about \$60.75, Pittsburgh.

(By Mail.)

At an informal meeting of the merchant blast furnace operators of the Mahoning and Shenango valleys held last week, the unsatisfactory condition of the pig iron market was thoroughly discussed, and it was the general opinion that the one remedy for the situation was a sharp reduction in output. Stocks of pig iron at all the furnaces in the two valleys are heavy, and iron is still being piled rapidly, as shipments to consumers are light. Prices of pig iron have gone off 25c. to 50c. more. With the new prices on ore, which, however, the furnaces have not yet commenced to use, it is claimed that prices on pig iron are close to actual cost. It is clearly seen that for the past five or six months too much pig iron has been made, and that a reduction in output should have been made when the consumption began to fall off. It is probable that a number of merchant furnaces in the two valleys will shut down for a period of 30 days or more between now and July 1. Reduction of output now seems to be the watchword, not only in pig iron, but in several lines of finished products. The coke makers have taken the matter actively in hand and in the past two weeks upward of 3,000 or more ovens in the Upper and Lower Connellsville regions have been blown out, the output of coke having thereby been reduced nearly 100,000 tons per week as compared with a month ago. Prices on Bessemer steel billets are weak, but open hearth steel is firm, being very scarce. The tin plate trade stands out prominently as probably the most active line in the whole list, the Jones & Laughlin Steel Company having sold its product up to September, although it has not yet started any of its new mills at Aliquippa. The scrap trade continues dull and neglected, prices being weak and lower. While prospects indicate that the coal strike in the Pittsburgh district may be settled shortly, it is seriously affecting the operations of the mills, some of which are running short. The open hearth plant of the Pittsburgh Steel Company at Monessen, Pa., is still idle and the Lockhart Iron & Steel Company at McKees Rocks, Pa., is running light. Other concerns are shutting down departments in which material is made that is not in active demand. The output of finished iron and steel in the Pittsburgh district is lighter to-day than it has been at any time for the last six months.

**Ferromanganese.**—Last fall some sellers bought quite heavily on the basis of about \$38, c.i.f., which is about \$40.50, Baltimore, and now that they have to specify for this

material, and the demand being dull, it is being offered quite freely on that basis for 80 per cent., with a probability that for large tonnage and prompt delivery \$40 could be done. The rate to Pittsburgh is \$1.95 a ton.

**Ferrosilicon.**—The inquiry for 500 tons from a Shenango Valley consumer, referred to in this report last week, has not been closed, but some low prices have been made which are causing the buyer to hold off. We quote 50 per cent. at \$59 to \$60, Pittsburgh; 10 per cent., \$23.90; 11 per cent., \$24.90, and 12 per cent., \$25.90, f.o.b. Pittsburgh.

**Muck Bar.**—In the entire absence of new inquiry or any recent sales we quote best grades of muck bar, made from all pig iron, at, nominally, \$28.50 to \$29, Pittsburgh.

**Rods.**—There is a fair amount of new inquiry for small lots, but most of the shipments being made by the mills are on old contracts placed last year, when prices were \$1 to \$2 a ton lower than they are now.

**Skelp.**—There is only a fair amount of new inquiry, most of it being for grooved and sheared iron plates. The pipe trade is dull and this is reflected in skelp, the demand for which has been quiet for some time. For ordinary widths and gauges we quote grooved steel skelp at 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.80c., and sheared iron skelp, 1.90c., all f.o.b. mill, Pittsburgh.

**Steel Rails.**—Last week the Carnegie Steel Company received new orders for 2500 tons of light rails and specifications against contracts for 1000 tons. No orders of moment are being placed for standard sections for domestic roads, but some nice orders are being entered for export. We quote steel axles at 1.75c. to 1.80c. and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., \$32; 12 to 14 lb., \$29; 16, 20 and 25 lb., \$28; 30 and 35 lb., \$27.75, and 40 to 45 lb., \$27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at \$28, at mill.

**Plates.**—The Bessemer & Lake Erie and the Union railroads, owned by the Steel Corporation, are inquiring for upward of 3000 cars, and the Elgin, Joliet & Eastern will soon be in the market with a fairly large inquiry. The New York Central has placed a contract for 1000 all steel cars with the Pressed Steel Car Company and a similar contract with the American Car & Foundry Company. The strike at the McKees Rocks Works of the Pressed Steel Car Company has been settled, and all of the men have returned to work. Orders for plates from boiler shops and other consumers are only fair, but the mills are pretty well filled up with specifications for the next 60 to 90 days. We quote 1/4-in. and heavier plates at 1.55c., Pittsburgh.

**Structural Material.**—The Pittsburgh Bridge & Iron Company, Rochester, Pa., has taken about 250 tons for an extension to the open hearth building of the Sharon Steel Hoop Company, Sharon, Pa. There is very sharp competition for work, a recent large job having been taken at about \$5 a ton less than the price named by the next lowest bidder. The structural mills are in need of specifications on plain material, and prompt deliveries can be had without any trouble. We quote beams and channels up to 15-in. at 1.50c. and in small lots at 1.55c., Pittsburgh.

**Sheets.**—An unusual condition in the sheet trade exists at present in the fact that the new demand for black sheets is heavier than for galvanized. Six or eight of the leading sheet mills are filled up with orders, but there are four or five that do not have much on their books, and they are shading regular prices on black sheets about \$1 a ton and on galvanized \$2 to \$3 a ton. The demand for blue annealed and electrical sheets continues active, and slight premiums continue to be paid for prompt deliveries. The American Sheet & Tin Plate Company is operating all its sheet mill plants, containing 167 hot sheet mills, with the exception of the Aetna-Standard Works at Bridgeport, Ohio, which is still idle and which has 23 hot mills. Regular prices on black and galvanized sheets will be found on a preceding page in this issue.

**Tin Plate.**—On Monday, May 2, the Jones & Laughlin Steel Company will start up five or six of its new hot tin mills at Aliquippa, Pa., and expects to have the first unit of 12 mills in full operation not later than May 15. It has already booked orders for all the tin plate it expects to make for the next two or three months. The McKeesport Tin Plate Company started up last week, five of its ten new hot sheet mills, and expects to start the other five in three or four weeks. The new demand for tin plate for May, June and July shipment is very active, and mills that care to do so have no trouble in getting premiums of 10c. to 15c. per box for prompt shipment. The American Sheet & Tin Plate Company is operating this week 189 hot tin mills and is steadily increasing its output of tin mill products. Prices of tin plate are firm. We quote 100-lb. cokes at \$3.60 per base box, f.o.b. Pittsburgh.

**Bars.**—The mills rolling steel bars are still three to four months behind in deliveries, and specifications against contracts continue to come in actively. The demand continues

heavy and all the leading steel bar mills are assured of work for three or four months. The implement makers and wagon builders are going slow this year in placing contracts, and it is not expected that large tonnage of this kind will come out for the next month or six weeks. Consumers feel that prices of steel bars, in view of the general unsatisfactory condition of the steel trade, will not be any higher, and may possibly be lower when the time comes for decisive action. We note a fair new demand for iron bars, but the market is slightly weaker. We continue to quote steel bars at 1.45c. for delivery ahead and 1.50c. for prompt shipment. Iron bars are held at 1.60c., f.o.b. Pittsburgh, but the market is not very firm.

**Hoops and Bands.**—New orders are only fair and are mostly for small lots. Specifications against contracts are being held up to some extent and shipments by the mills have fallen off. We quote steel hoops for forward delivery at 1.50c. to 1.60c., while for prompt shipment as high as 1.65c. is obtainable. Steel bands are 1.40c. to 1.50c. on contracts for forward delivery and 1.60c. to 1.65c. for reasonably prompt shipment, these carrying steel bar card extras.

**Spelter.**—The market has shown another sharp decline, and we quote prime grades of Western at 5.25c., East St. Louis, equal to 5.37½c., Pittsburgh.

**Spikes.**—The railroads are still buying small lots only. All the makers could handle more orders if they had them. We note a fairly active demand for boat and small railroad spikes, and prices are well maintained. We quote standard sizes of railroad spikes, 4½ x 9-16 in. and larger, at \$1.70 and Western shipment and \$1.75 for local trade. Boat spikes are firm at \$1.75, base, and small railroad spikes at \$1.75, base. These prices are for carload and larger lots.

**Shafting.**—The new demand for shafting continues active and has been for three or four months, giving the makers all the tonnage they can possibly handle, and in some cases shipments are delayed. Specifications against contracts placed last fall continue to come in actively. Regular discounts of 55 per cent. off in carloads and 50 per cent. in less than carloads, delivered in base territory, are being firmly held.

**Rivets.**—The new demand for rivets is not quite so active, but specifications against contracts are fairly satisfactory. Regular prices are being maintained.

**Wire Products.**—There has been no improvement in the general situation in the wire trade, specifications from jobbers and small dealers not coming in satisfactorily and not being as large by any means as it had been expected they would be at this season. Practically all the jobbers are carrying heavy stocks of nails and wire, which are not moving out freely. There is some little unevenness in prices. In some cases wire nails are shaded 5c. a keg and wire to the extent of about \$1 a ton; in other words, the market is about on the basis that it was before the advance of \$1 a ton was made December 11. Regular prices on wire products are as follows: Wire nails, \$1.85 in carload and larger lots; painted barb wire, \$1.85; galvanized, \$2.15; annealed fence wire, \$1.65; galvanized, \$1.95, and cut nails, \$1.85, all f.o.b. cars, Pittsburgh, usual terms, with full freight to destination added.

**Merchant Pipe.**—The Philadelphia Company of this city bought last week 15 miles of 10-in. pipe from an independent pipe mill and is inquiring for 15 miles of 16-in. The Manufacturers' Light & Heat Company has an inquiry out for 10 to 20 miles of 10 to 12-in., but may not buy at once. The new demand for pipe is only fair, and the large stocks held by the jobbers and mills are not moving out freely. Some departments of the National Works of the National Tube Company have been shut down for lack of coal. The mills are fairly busy on large pipe, but not on small sizes. Discounts on steel pipe are said to be firmly maintained.

**Boiler Tubes.**—Fair orders continue to be placed with local mills for locomotive tubes, and some inquiries are in the market. The new demand for merchant tubes is not large, and none of the mills has enough orders to run full. Discounts are fairly well maintained.

**Coke.**—The coke makers have taken hold of the situation in earnest and are shutting down ovens at rapid rate. Upward of 3000 in the Upper and Lower Connellsville regions have been blown out in the last two weeks, and the large producers will blow out more this week. Although prices do not show any improvement, the tone of the market is a little stronger. Standard makes of furnace coke running under 1 per cent. in sulphur are held at about \$1.75 per net ton, at oven, for prompt shipment, while on contracts for last half of the year from \$1.90 to \$2 is quoted. Best makes of 72-hour foundry coke are quoted from \$2.50 to \$3 per net ton, at oven. Several inquiries for furnace coke are reported as being in the market for last half of the year delivery. The consumption of furnace coke in the next few months will be much lighter if a general shutdown of the furnaces to reduce the output of pig iron should occur. The output of coke in the Upper and Lower Connellsville regions

last week was 338,374 net tons, as compared with 440,000 tons in the corresponding week of last month.

**Iron and Steel Scrap.**—The scrap trade is referred to by dealers as being about as bad as it could possibly be. The shortage in coal is restricting operations materially among consumers of scrap. Very little is being sold by dealers to consumers, the latter believing that prices may go still lower. We have made an average reduction of about 50c. a ton on all grades of scrap, and the market is none too strong at the lower prices. Dealers quote about as follows, per gross ton, for delivery at Pittsburgh or elsewhere as noted:

Heavy steel scrap, Steubenville, Pol-	
lansbee, Monessen and Pittsburgh...	\$15.75 to \$16.00
Heavy steel scrap, Sharon, Pa., delivery	15.50 to 15.75
No. 1 foundry cast.....	15.25 to 15.50
No. 2 foundry cast.....	14.00 to 14.25
Bundled sheet scrap, at point of ship-	
ment.....	12.75 to 13.00
Re-rolling rails, Newark and Cambridge,	
Ohio, and Cumberland, Md.....	16.75 to 17.00
No. 1 railroad malleable scrap.....	15.25 to 15.50
Grate bars.....	10.75 to 11.00
Low phosphorus melting stock.....	19.50 to 20.00
Iron car axles.....	25.50 to 26.00
Steel car axles.....	22.00 to 22.25
Locomotive axles.....	26.50 to 27.00
No. 1 busheling scrap.....	13.75 to 14.00
No. 2 busheling scrap.....	10.50 to 10.75
Old car wheels.....	15.00 to 15.25
Sheet bar crop ends.....	16.25 to 16.50
Cast iron borings.....	9.00 to 9.25
Machine shop turnings.....	11.00 to 11.25

We note purchases by dealers of about 200 tons of borings at \$9; 500 to 600 tons of heavy steel scrap at \$15.75; 300 tons of borings at \$11; steel axles at about \$27; No. 1 busheling scrap at \$13.75, and railroad malleable scrap at \$16.25, all f.o.b. cars, Pittsburgh.

The Keystone Iron & Metal Company, dealer in iron and steel scrap, with offices and yards at McKees Rocks, near Pittsburgh, will establish an office May 1 at 712 Bessemer Building, Pittsburgh, in charge of Charles Neidhardt, Jr., one of the owners of the company.

## Chicago.

FISHER BUILDING, April 27, 1910.—(By Telegraph.)

Interest in the steel market in the West continues to center in the efforts of the plow manufacturers to obtain an inside price on bars. None of the mills has shown any inclination thus far to make concessions from 1.45c., Pittsburgh, as they are all sold farther ahead on bars than on any other steel product. Even if the leading interest were to make concessions it is not believed in the Chicago market that other mills would follow it, as the demand for steel bars is so persistent that the mills are generally as far behind now on specifications as they were at the beginning of the year. The continued pressure from buyers to obtain merchant mill products from store, which they have been accustomed to buy direct from the mills, would indicate that the manufacturers have been very conservative in maintaining the prices now quoted, as they can easily establish a higher level of values on such products. In structural shapes there is a fair demand from fabricators and the price in this market is firm on the basis of 1.55c., Pittsburgh, although concessions are to be had on plates. The decline in scrap has been followed in lowered prices of bar iron. The usual spring movement is now under way in the scrap market and receipts are large, but not equal to the flood of scrap that poured into the Chicago market last fall. The railroads have resorted to private sales to avoid depressing the market by making public the lists they have to offer. One leading road recently made a private offer to a few buyers of 4000 tons of scrap without obtaining prices to justify the sale of its accumulation. There are many inquiries for copper and other metals for forward delivery, but not much business is done except for prompt shipment. It is estimated that the consumption of spelter is considerably less at present than last fall and winter, as buyers are not specifying so heavily for galvanized wire products and sheets.

**Pig Iron.**—The market for Southern iron appears to show more firmness at \$12, Birmingham, than at any price that has been quoted in this market for some time. After each decline in the acknowledged price during the past six months there has been a flurry of firmness for a few days at the lower price quoted, to be followed shortly after by concessions which eventually have grown into another decline; but the furnace interests seem a little more determined this time, and there is less disposition to effect sales by making a slight concession from the ruling price. A buyer was recently unsuccessful in obtaining a few cars of spot high phosphorus iron at a concession from \$12, although high phosphorus iron has been selling regularly below quotations for more popular brands, especially for spot shipment. It is believed that there is no warrant or resale iron in the South on which the cost is as low as \$12, allowing interest and carrying charges, and lower figures will necessarily come direct from the furnaces. Buyers are still confident of being

able to cover their last half requirements at \$11.50, or even \$11, and not much business is being done. It is estimated that sales of Southern iron the past week in Chicago territory amount to less than 10,000 tons, or about the same as for the previous week. The most important transaction reported was the purchase of 4000 tons by a Michigan stove manufacturer, comprising 1500 tons of Northern and 2500 tons of Southern; but Chicago houses do not appear to have taken or participated in the business. The furnaces around Lake Erie would have the advantage in freights over Chicago on the Northern iron. A fair amount of business is being done in Northern iron in this territory, chiefly in small lots. It is understood that the recent inquiry from a new steel foundry for low phosphorus iron has been cut down to 1000 tons for an initial purchase. The following quotations are for April, May and June shipment, Chicago delivery:

Lake Superior charcoal.....	\$19.00 to \$19.50
Northern coke foundry, No. 1.....	17.75 to 18.25
Northern coke foundry, No. 2.....	17.25 to 17.75
Northern coke foundry, No. 3.....	16.75 to 17.25
Northern Scotch, No. 1.....	18.25 to 18.75
Southern coke, No. 1.....	16.60 to 17.10
Southern coke, No. 2.....	16.35 to 16.85
Southern coke, No. 3.....	16.10 to 16.60
Southern coke, No. 4.....	15.85 to 16.35
Southern coke, No. 1 soft.....	16.60 to 17.10
Southern coke, No. 2 soft.....	16.35 to 16.85
Southern gray forge.....	15.60 to 16.10
Southern mottled.....	15.35 to 15.85
Malleable Bessemer.....	17.25 to 17.75
Standard Bessemer.....	19.90 to 20.40
Jackson Co. and Kentucky silvery, 6%.....	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8%.....	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10%.....	21.90 to 22.40

(By Mail.)

**Billets.**—None of the Chicago mills has billets to offer, a fact which shows there is no relaxation in the demand upon them for finished products. Offerings of Bessemer billets by Eastern mills are more plentiful, but open hearth billets continue relatively scarce.

**Rails and Track Supplies.**—Chicago mills have to go slow in taking orders for standard sections, as they are booked into the last quarter. Sales last week amounted to about 2500 tons for the local mills. The market continues very strong for track fastenings and supplies. We quote standard railroad spikes at 1.80c. to 1.90c., base; track bolts with square nuts, 2.50c. to 2.60c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., \$27; 30 to 35 lb., \$27.75; 16, 20 and 25 lb., \$28; 12 lb., \$29, Chicago.

**Structural Material.**—The fabricating interests were disappointed last week by the failure of Western railroads to accept bids on about 20,000 tons of bridge material. In the building branch the bookings were not equal to the average in this territory, as many important projects are going over into May. The American Bridge Company obtained the contract for the Central National Bank at Denver, 800 tons, and a new smelter at Butte, Mont., 510 tons, for the Butte & Superior Copper Company. A manufacturing plant for the Power & Mining Machinery Company, Cudahy, Wis., 1115 tons, was booked by the Worden-Allen Company, Milwaukee. The First National Bank at Riverside, Cal., 483 tons, was let to the Baker Iron Works, San Francisco. A foundry building for the Kewanee Boiler Company, Kewanee, Ill., was booked by the Morava Construction Company. The Chicago, Burlington & Quincy Railroad has let to the Pennsylvania Steel Company the contract for two truss span bridges amounting to 375 tons. The price of plain material in this market is very firm at 1.73c., base, and the mills are taking a fair tonnage of business at this price. We quote plain material from mill, 1.73c. to 1.78c., Chicago; from store, 2c., Chicago.

**Plates.**—There is a good volume of current business in tank plates and the mills in this district are booked well ahead on both sheared and universal plates. We quote mill prices at 1.68c. to 1.73c., Chicago; store prices, 2c., Chicago.

**Sheets.**—Blue annealed sheets in this market continue to bring a premium of 5 to 10 cents per 100 lb. above what is considered the market price, if the buyer wants prompt delivery. Reports are persistent, however, of weakness in galvanized sheets among Eastern mills, the concessions offered being about equal to the decline in spelter since the high level in that market last winter. Prices are reported well maintained on black sheets, so that the spelter market seems to be the controlling factor in galvanized. We quote as follows, Chicago: No. 10 annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 2.90c. to 3c.; No. 28 galvanized, 4c. to 4.10c.

**Bars.**—The plow manufacturers are non-committal regarding their conference last week, but the meeting was unusually well attended, and, while it is stated that no official action was taken regarding prices or the purchase of bars, they are not making haste to contract for the coming year. It is understood that one of the plow men has bought 1000 tons at 1.45c., Pittsburgh, but the general impression is that the greater part of the business will not be contracted for until after May 1. The plow men from time

immemorial have obtained an inside price on bars, owing to the large tonnage they buy, and it is understood that there is considerable disappointment among them over the fact that there is no inside price this year, the mills insisting that 1.45c., Pittsburgh, is their minimum for the largest buyers, or 1.63c., Chicago. The course of the market would indicate, however, that this may be an inside price before the end of the year, as the bar mills have about six months' business now and are about as far behind on specifications as they were in January. The growth of the bar business has been a striking feature of the market. The plow men have done all the way from 25 to 50 per cent. more business the past season than ever before, and they were not prepared for it. The bar mills have been unable to meet the demand in excess of contracts which has come from this trade, and in some cases the plow manufacturers have had to exhaust the possibilities of buying from store. In striking contrast with the strength in soft steel bars is the continued weakness of bar iron. The railroads, however, are the principal buyers of bar iron and their requirements are far short of the business expected of them. The rail stock mills are well supplied with orders and contracts, however, and could sell their entire output for a year if they wanted to commit themselves so far ahead, as hard steel bars answer the purpose in a considerable part of the agricultural trade as well as in other industrial consumption. Subject to the usual delay in delivery of soft steel bars, we quote as follows: Soft steel bars, 1.63c. to 1.68c.; bar iron, 1.50c. to 1.55c.; hard steel bars rolled from old rails, 1.55c. to 1.60c., all Chicago.

**Rods and Wire.**—It is understood that the wire interests have not yet opened their books for industrial business beyond July 1. The jobbing trade continues very active. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.83c.; wire nails, 2.03c.; painted barb wire, 2.03c.; galvanized, 2.33c., all Chicago.

**Merchant Steel.**—The unusual demand from store contingents and jobbers are unable to keep their stocks in line for the enormous trade they are doing. On cold rolled shafting the mills are reported about 10 months behind, and jobbers' stocks are not equal to the demand for tire steel and other bar mill products. Deliveries are better on tool steel.

**Cast Iron Pipe.**—No important lettings are reported for last week, but several attractive ones are pending this week for water pipe. The St. Louis letting of 2100 tons will be decided this week, as well as one at Kansas City, Kan., of about 3000 tons, and another will come up at Cincinnati for 1500 tons. The gas companies are specifying freely on their contracts. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., \$28.50; 6 to 12 in., \$27.50; 16-in. and up, \$26.50, with \$1 extra for gas pipe.

**Metals.**—There has been a fair demand for metals, but chiefly for prompt delivery. Many inquiries are in the market for future delivery, but so far have not resulted in many sales. Spelter is a shade weaker, the inside price to consumers who buy in large lots running as low as 5.35c. to 5.40c., Chicago delivery. The demand is light. The mill consumption of spelter is undoubtedly less at the present time than last fall and winter. The wire and sheet mills are the largest consumers of spelter, and a lighter demand from these industries during the next month or two may have some influence on the course of the spelter market. We quote Chicago prices as follows: Casting copper, 13½c.; lake, 13½c., in carloads, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots, 33¾c.; small lots, 35c.; lead, desilverized, 4.35c. to 4.40c., for 50-ton lots; corroding, 4.60c. to 4.65c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.60c. to 5.65c.; Cookson's antimony, 10½c., and other grades, 9¾c. to 10¼c.; sheet zinc is \$7.75, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13½c.; copper bottoms, 11¼c.; copper clips, 13¼c.; red brass, 12¼c.; yellow brass, 9½c.; light brass, 7c.; lead pipe, 4¼c.; zinc, 4½c.; pewter, No. 1, 24c.; tin foil, 26c.; block tin pipe, 30c.

**Old Material.**—Receipts of scrap are increasing and are running in excess of the demand from consumers. This makes a weak market and prices are generally lower, especially in wrought scrap and other rolling mill material. While the receipts are not equal to the flood of scrap that came into the Chicago market last fall, consumers are not so anxious now as they were then to accumulate stocks, and buyers are generally able to keep up their stocks by taking the odd lots offered them by dealers. A lot of 4000 tons of choice wrought scrap, offered privately in the market last week by a leading railroad, went begging, as the rolling mills are apparently well supplied. Re-rolling rails are holding steady at about \$17.50, delivered. A railroad which recently offered 50 tons of re-rollers on a list made a private sale of 700 tons, and a great deal of material is being sold in this manner by the railroads, so that the formal monthly lists do not throw much light on market conditions or the amount of scrap in sight. The high prices last fall coincided with the highest price of the year for pig iron. Southern

iron has now declined \$3 in this market and Northern iron \$2. Steel scrap is off about \$3 from the high point last fall, but other lines have only declined \$1 to \$2. Old car wheels are quoted lower this week, but there is no demand from the foundries and may not be for some time. There is a considerable accumulation of wheels in foundry stocks and the yards of dealers and railroads. Occasional lots of wheels are bought by foundries other than those making car wheels, where the facilities are available to handle them. Shoveling steel is going at a larger discount than usual below the price of melting steel, and turnings and borings are quoted lower. Following prices are per gross ton, delivered, Chicago:

Old iron rails.....	\$18.50 to \$19.00
Old steel rails, re-rolling.....	17.50 to 18.00
Old steel rails, less than 3 ft.....	16.25 to 16.75
Relaying rails, standard sections, subject to inspection.....	24.00 to 25.00
Old car wheels.....	16.00 to 16.50
Heavy melting steel scrap.....	14.25 to 14.75
Frogs, switches and guards, cut apart.....	14.25 to 14.75
Shoveling steel.....	13.25 to 13.75

The following quotations are per net ton:

Iron angles and splice bars.....	\$16.00 to \$16.50
Iron car axles.....	21.00 to 21.50
Steel car axles.....	21.50 to 22.00
No. 1 railroad wrought.....	13.75 to 14.25
No. 2 railroad wrought.....	12.75 to 13.25
Springs, knuckles and couplers.....	13.50 to 14.00
Locomotive tires, smooth.....	18.50 to 19.00
No. 1 dealers' forge.....	11.50 to 12.00
Steel axle turnings.....	10.50 to 11.00
Machine shop turnings.....	9.00 to 9.50
Cast and mixed borings.....	5.50 to 6.00
No. 1 busheling.....	11.50 to 12.00
No. 2 busheling.....	9.00 to 9.50
No. 1 bolters, cut to sheets and rings.....	10.00 to 10.50
No. 1 cast scrap.....	13.50 to 14.00
Stove plate and light cast scrap.....	11.50 to 12.00
Railroad malleable.....	13.50 to 14.00
Agricultural malleable.....	12.00 to 12.50
Pipes and flues.....	10.50 to 11.00

## Philadelphia.

PHILADELPHIA, Pa., April 26, 1910.

The feeling that prices have not reached bottom still prevails. Under the circumstances the iron market is irregular; it is difficult to define the actual range of quotations, particularly in crude materials. The Eastern Pig Iron Association at its regular meeting last week noted a sharp decrease in unfilled orders, but stocks showed a slight decline, due to the fact that deliveries are being freely taken by customers. There was a feeling, however, that the rate of production was too high and that a reduction of the output would aid considerably in bringing the iron market to more normal conditions. This policy will be followed and some four or five companies are making preparations to blow out at least one each of their furnaces. Further increase in stocks in this territory will thus probably be checked. High productive costs may also result in some further curtailments, as it is evident that at present selling prices some producers have very narrow margins. In finished products the demand has been rather light; some fair business in plates and shapes is in sight, but the total is still under productive capacity. Shipbuilders are figuring on five new vessels, which will require some 8000 to 10,000 tons of plates and shapes. Billets are a trifle more active and sheets are strong. Old material is lower on small sales.

**Pig Iron.**—The only movement has been in the foundry grades, but sales have been rather small, with prices a shade lower. Cast iron pipe makers, who have been making inquiries more freely recently, have taken a few thousand tons of low grade iron, comprising one lot of several thousand tons of No. 3 Southern foundry and another of 1000 tons of off grade Northern iron, the latter, which ran high in sulphur, selling at close to \$15.75, delivered. Southern iron is becoming more of a factor in Eastern markets. At the \$12, Birmingham, basis, for No. 2 foundry, it can be sold, delivered in this territory, at \$16.20 to \$17, dependent on the delivery point, which is considerably under the price asked by leading makers of Northern standard brands. The local locomotive builder is understood to have placed orders against its recent inquiry for 500 to 1500 tons of Northern foundry forge. Other fair sized blocks of No. 2 X and No. 2 plain, which have been before the trade, are said to be still unclosed. The bulk of the sales have been in small lots, at prices ranging close to \$17.75, delivered, for No. 2 X foundry. An occasional sale of this grade is reported at \$18, delivered, but such transactions are largely carload business on special brands. Good grades of No. 2 X foundry iron are offered for second quarter shipment at \$17.50, delivered, and it is difficult to get buyers interested in any tonnage, even at the inside figure. Virginia foundry irons are a trifle easier; while \$15, furnace, equal to \$18, delivered in this vicinity, is openly quoted for No. 2 X, \$17.75, delivered, can be done for second quarter shipment, although some few sellers still hold at \$18.25. Practically no business in any grade has been done for delivery beyond the second quarter. Consumers hold off, while producers are less disposed to quote on extended delivery, although if forced to

do so would, no doubt, accept business for third quarter at least at the prevailing prices for second quarter shipment. Forge iron has been dull and quotations show quite a wide range, dependent on quality and seller's position. The steel making grades are not in active demand. Basic from outside this territory is offered without interesting buyers. While this grade is nominally quoted at \$17.50, delivered, it is believed that \$17 could be done, should buyers show a disposition to purchase. Sales of small lots of low phosphorus iron are reported. Quotations are to a large extent nominal and it is difficult, owing to existing conditions, to quote the full range of the market. For standard brands, delivered in buyers' yards during the second quarter, open quotations range about as follows:

Eastern Pennsylvania, No. 2 X foundry	\$17.50 to \$18.00
Eastern Pennsylvania, No. 2 plain	17.00 to 17.50
Virginia, No. 2 X foundry	17.75 to 18.25
Virginia, No. 2 plain	17.50 to 18.00
Gray forge	16.50 to 16.75
Basic	17.50
Standard low phosphorus	23.00 to 23.25

**Ferromanganese.**—Several small sales being reported for prompt and near future delivery at \$41, Baltimore. No demand for extended delivery has developed.

**Billets.**—The market is a shade stronger. Specifications have been somewhat better, in that the large consumer who had temporarily suspended work recently owing to labor troubles resumed operations during the week. There has been a fair run of new business, and prices for basic open hearth rolling-billets are firm at \$30, delivered in this vicinity. A good demand for forging billets is reported at unchanged prices, \$32 to \$34, Eastern mill, dependent on specification and analysis.

**Plates.**—The immediate demand is usually for small lots for early delivery. Orders are numerous, but the aggregate tonnage is not heavy. Some large sized propositions in ship plates are expected to develop in the near future, and a little bridge business is also pending, but the amount of large work in sight is not extensive. Eastern mills can make prompt shipments, on which prices for ordinary plates are firm at 1.75c, delivered. In sharp competition, or where the time of shipment is not an important factor, 1.70c, delivered, can easily be done.

**Structural Material.**—The most important item before the trade is the contract for the hot metal bridge over the Schuylkill River connecting the Swede furnaces with the Ivy Rock Works of the Alan Wood, Iron & Steel Company, which has been practically if not formally placed. Contracts for a number of buildings to be erected in this vicinity are pending, but develop slowly. Considerable boat business is also in sight. Current business, however, is of small size individually and mills, as a rule, can make prompt deliveries on nearly all classes of material. While plain shapes are quoted at 1.65c to 1.70c, delivered in this territory, lower prices for desirable business are said to be obtainable, dependent on tonnage, specification and delivery point.

**Sheets.**—An improved demand is reported and order books of mills in this territory are in more satisfactory shape, a greater volume of business for somewhat extended delivery being reported. Prices are quite firm, the following range representing the market for near future shipments: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3c.; No. 27, 3.10c.; No. 28, 3.20c.

**Bars.**—Steel bars are in comparatively fair demand, but deliveries are unsatisfactory. Refined iron bars are not particularly active and, while the leading makers hold prices firmly, smaller producers make concessions for business of a desirable nature. Refined iron bars are quoted from 1.50c. to 1.60c., delivered in this vicinity, with steel bars at 1.60c. to 1.65c.

**Old Material.**—With the exception of a few transactions in heavy melting steel by consumers outside the associated steel mills, business in the old material market has been practically at a standstill. Buyers generally take no interest. In many grades prices show a decline, mills frequently reducing their offering prices sharply. No. 1 heavy melting steel has been sold in small and moderate tonnages at \$15.75 to \$16, delivered, while sales in other grades have been hardly extensive enough to fix quotations. The following range of prices about represents the market for near future deliveries in buyers' yards in this vicinity:

No. 1 steel scrap and crops	\$15.75 to \$16.25
Old steel rails, re-rolling	17.25 to 17.75
Low phosphorus	21.00 to 21.50
Old steel axles	22.00 to 23.00
Old iron axles	28.00 to 28.50
Old iron rails	20.50 to 21.50
Old car wheels	15.50 to 16.00
No. 1 railroad wrought	18.25 to 18.75
Wrought iron pipe	15.25 to 15.75
No. 1 forge fire	13.50 to 14.00
No. 2 light iron	9.50 to 10.00
Wrought turnings	11.00 to 11.50
Cast borings	10.00 to 10.50
Machinery cast	15.75 to 16.25
Railroad malleable	15.75 to 16.25
Grate bars	13.00 to 13.50
Stove plate	11.00 to 11.50

**Coke.**—With the settlement of labor difficulties, the market shows a tendency toward more firmness, particularly in

furnace coke, quotations for which range from \$1.65 to \$1.90 per net ton, at oven, for deliveries varying from prompt to second half, but little business has been transacted. Foundry coke has not shown the same strength as furnace coke, being quoted as low as \$2.25, at oven, for spot shipments; for forward delivery, however, prices range from \$2.50 to \$2.75. For reasonable delivery in this territory the following range of prices per net ton is named:

Connellsville furnace coke	\$3.90 to \$4.10
Foundry coke	4.75 to 5.25
Mountain furnace coke	3.50 to 3.70
Foundry coke	4.35 to 4.85

## Cleveland.

CLEVELAND, OHIO, April 26, 1910.

**Iron Ore.**—The only sales reported are a few small lots. Little additional demand is expected until there is a decided change in the condition of the pig iron market. The movement down the lakes will probably be light for some weeks, as consumers are in no hurry for their tonnage. Orders for shipment from docks are also light. Prices continue firm. We quote as follows: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range non-Bessemer, \$4.20; Mesaba non-Bessemer, \$4.

**Pig Iron.**—More furnaces are going out of blast. One of the Toledo stacks of Pickands, Mather & Co. was blown out late last week and one of the Columbus Iron & Steel Company's will go out the latter part of this week. There are few inquiries and prices are weak. While No. 2 foundry is quoted at \$15.50, Valley furnace, for spot shipment and second quarter and \$15.75 for the last half, it is probable that these prices could be shaded. Although some producers are refusing to make quotations at the present minimum prices, there is a feeling among consumers that the bottom has not been reached, and many are disposed to wait a while before placing contracts for their last half requirements. Some of the Southern producers are quite active in looking for business in this territory. One sales agency reports sales during the week in northern Ohio of 1000 tons, and 500 tons for the last half and 500 tons for the second quarter delivery, all at \$12, Birmingham, for No. 2, this being the minimum price quoted on Southern iron. Two inquiries, each for 1000 tons of foundry iron for last half delivery, are pending. A northern Ohio steel castings company is in the market for 1000 tons of basic for the same delivery. For spot shipment and the second quarter we quote, delivered Cleveland, as follows:

Bessemer	\$18.40
Northern foundry, No. 1	16.75 to 17.00
Northern foundry, No. 2	16.40 to 16.75
Northern foundry, No. 3	16.15 to 16.40
Gray forge	16.15
Southern foundry, No. 2	16.35
Jackson Co. silvery, 8 per cent. silicon	21.05 to 21.55

**Coke.**—The market is very dull. Prices on foundry grades are lower. The decline on furnace coke appears to have been checked by the blowing out of ovens. We quote Connellsville furnace coke at \$1.70 to \$1.75 per net ton, at oven, for spot shipment and \$2 to \$2.25 on contract. Connellsville 72-hr. foundry coke is held at \$2.25 for spot shipment and \$2.40 to \$2.50 on contract.

**Finished Iron and Steel.**—Current orders for small lots of plates and structural material show an improvement and mill agencies able to make quick shipments of these products report a better volume of business than for several weeks. The demand for plates for boiler and tank work has become more active. Jobbers also report a good volume of business. While not much business is coming out for future delivery there is a fair volume of specifications and the general tone of the market is good. Some of the mills are taking contracts for plates and shapes for delivery until October 1 at 1.55c, Pittsburgh. There are still reports of this price being shaded to 1.50c. on desirable orders for early delivery. Not much new business in steel bars is coming out. One or two mills that have been holding off now announce that they will take contracts from the implement makers at 1.45c, Pittsburgh, until January 1, and some tonnage has been placed on that basis. The demand for sheets is only fair and prices on black and galvanized sheets are being shaded from \$1 to \$2 a ton for early delivery. The general structural outlook continues very satisfactory. The American Bridge Company has taken the contract for 450 tons for an addition to the plant of the Warner & Swasey Company, Cleveland. The Michigan Central Railroad has received bids for 1400 tons for bridge work and the Lake Shore Railroad has an inquiry out for 1100 tons. The demand for shafting continues very heavy. A prominent automobile concern in Michigan is reported to have placed a contract with the leading interest for 7500 tons of sheets and 2500 tons of other products, mostly shafting. The Toledo Railways & Light Company has placed an order with the leading interest for 500 tons of standard section rails and track fastenings. The Cleveland Electric Illuminating Company has let a contract for foundations for an addition to its power plant that will require 350 tons of sheet steel piling.

The demand for light rails in carload lots from coal mining companies is quite active and prices are firm. There is a good demand for forging billets for early shipment. The demand for iron bars is only fair, but local mills continue to run full. Prices are not firm. The general quotation is 1.50c., at mill. There is an inquiry out from a railroad for 1000 tons of iron bars.

**Old Material.**—The demand is light and prices are decidedly weak, although nominal quotations are unchanged, with the exception of heavy melting steel and busheling scrap, which have been marked down from 25 to 50 cents. Mills are taking scrap very irregularly on contracts, embargoes being frequently in effect. No sales larger than carload lots are reported. There is no demand whatever from foundries. Some yard dealers feel that the bottom has been reached and are buying for stock. Others expect prices to go a little lower before there is a turn in the market. No indications of an early improvement are visible. Prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$15.50 to \$16.00
Old iron rails.....	17.50 to 18.00
Steel car axles.....	22.00 to 22.50
Heavy melting steel.....	14.00 to 14.50
Old car wheels.....	16.00 to 16.50
Relaying rails, 50 lb. and over.....	22.50 to 23.50
Agricultural malleable.....	13.50 to 14.00
Railroad malleable.....	15.00 to 15.50
Light bundled sheet scrap.....	10.50 to 11.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$21.50 to \$22.00
Cast borings.....	7.50 to 8.00
Iron and steel turnings and drillings.....	8.50 to 9.00
Steel axle turnings.....	11.00 to 11.50
No. 1 busheling.....	12.00 to 12.50
No. 1 railroad wrought.....	14.75 to 15.25
No. 1 cast.....	13.25 to 13.50
Stove plate.....	11.50 to 12.00
Bundled tin scrap.....	11.00 to 11.50

## Cincinnati.

CINCINNATI, OHIO, April 27, 1910.

Adverse weather conditions are blamed largely for existing apathy in the iron and steel market. There is no life in any item, and while no material change is to be noted in prices, pig iron still shows weakness. A little more interest is displayed in coke, it being reported that furnaces in the Buffalo district are figuring on requirements of 75,000 to 100,000 tons. Recent purchases of the leading pipe interest are guarded very sacredly, but it is now believed that the total amount taken was 10,000 to 15,000 tons less than first reported, the desired tonnage of low grades not being available. A canvass of this market confirms this, as forge is now salable at \$11 to \$11.50, Birmingham, with little to be had.

**Pig Iron.**—No interest is displayed by consumers, notwithstanding it is generally admitted that there is a large tonnage of iron to be bought for last half requirements. Northern furnacemen are, it is reported, arranging for some kind of concerted action looking to relief from the effects of higher priced ore for last half. Considerable uneasiness is caused by rumored shading of the price for last half delivery to \$15.75, and even \$15.50, Iron-ton, which is said to be too uncomfortably near cost. There are no inquiries for round tonnages, quantities this week ranging from a carload or so to 600 tons. An Indiana manufacturing concern is figuring on about 400 tons of Southern foundry iron, running from 1.25 to 1.50 in silicon, for last half. A Michigan pump manufacturer wants 600 tons of No. 2 foundry. Some close competition is on for this business, and it is expected to secure a price of about \$11.75, Birmingham, if taken prior to the third quarter. A recent inquiry for 2000 tons of forge and 4000 tons of No. 4 foundry is said to be still unsatisfied, except as to the No. 4 foundry, a part of which was furnished on a basis of \$11, Birmingham. There is undoubtedly plenty of Southern iron to be had at \$12, Birmingham, notwithstanding the formal quotation is \$12.50, and for any delivery. There is no interest in high silicons or special irons. Sales agents admit that resale iron is at last practically eliminated. Jobbing foundries are, as a rule, not keeping up the early year melting standard, and foundrymen are delaying their last half purchases because of this condition, but foundries making specialties are rushed in every department. Only one of the large agricultural manufacturing interests, a Michigan concern, has bought recently, taking but 500 tons for last half. For immediate delivery and through the remainder of the year we quote, based on freight rates of \$3.25 from Birmingham and \$1.20 from the Hanging Rock district, as follows:

Southern coke, No. 1 foundry.....	\$15.75 to \$16.25
Southern coke, No. 2 foundry.....	15.25 to 15.75
Southern coke, No. 3 foundry.....	14.75 to 15.25
Southern coke, No. 4 foundry.....	14.25 to 14.75
Southern coke, No. 1 soft.....	15.75 to 16.25
Southern coke, No. 2 soft.....	15.25 to 15.75
Southern gray forge.....	14.25 to 14.50
Ohio silvery, 8 per cent. silicon.....	19.70 to 20.20
Lake Superior coke, No. 1.....	17.20 to 17.70
Lake Superior coke, No. 2.....	16.70 to 17.20
Lake Superior coke, No. 3.....	16.20 to 16.70
Standard Southern car wheel.....	25.25 to 25.75
Lake Superior car wheel.....	22.25 to 22.75

(By Mail.)

**Coke.**—Inquiries are beginning to accumulate for foundry grades on contract from June and July. There is little or no inquiry for furnace grades. On Pocahontas furnace the spot price is about \$2 per net ton, at oven, with a premium of 10c. for special conditions in grade and delivery, and contracting is on a basis of \$2; foundry brands are bringing \$2.35 to \$2.50, and contracting is on a basis of \$2.25 to \$2.35. Connellsville furnace grades are quotable at \$1.80 to \$2 for spot and foundry ranges from \$2.25 to \$2.75, according to grade and conditions of delivery. There is no change in Wise County prices.

**Finished Products.**—Those interests dealing in structural material, sheets, bars, &c., all report conditions excellent from a warehouse and jobbing viewpoint. Iron bars are dull. Local offices of the large bridge building interests report many good sized railroad contracts held up, but promising. Looking forward to the usual buying by implement makers in May and June, sales managers are expecting considerably increased business for those months. A few of the large interests are booking business at present prices to October 1. For quick delivery mills are getting 1.50c. for steel bars, Pittsburgh, but 1.45c. can be done. Structural material is quoted at 1.55c., Pittsburgh, but for very prompt delivery 1.60c. and up is paid. No new building projects have developed in this market during the week, notwithstanding reports indicate that a number are in preparation. Structural material out of stock is selling at 2c. up to 15-in. sizes. Steel bars in small lots are bringing 1.90c. Iron bars are weaker, and 1.50c., Pittsburgh, can easily be done, while it is reported that some makers in this territory are accepting 1.55c. and 1.60c. at their mills.

**Old Material.**—There is a perceptible weakening of the scrap markets. It is believed that \$13 to \$13.25 can be done on heavy melting steel, although mills are apparently not attracted even by that low price, for few if any sales are recorded. Melters appear to be expecting a return to the conditions of about two years ago when heavy melting steel was bought at \$11.75, gross ton. Such business as is going is confined to small lots and at very low prices. The following range of prices are given as about representative of the market and are for delivery in buyers' yards in Cincinnati and southern Ohio:

No. 1 railroad wrought, net ton.....	\$12.75 to \$13.00
Cast borings, net ton.....	7.00 to 7.50
Heavy melting steel scrap, gross ton.....	13.50 to 14.00
Steel turnings, net ton.....	9.00 to 9.50
No. 1 cast scrap, net ton.....	12.50 to 13.00
Burnt scrap, net ton.....	9.00 to 10.00
Old iron axles, net ton.....	18.00 to 18.50
Old iron rails, gross ton.....	17.50 to 18.00
Old steel rails, short, gross ton.....	15.00 to 15.50
Old steel rails, long, gross ton.....	16.00 to 16.50
Relaying rails, 56 lb. and up, gross ton.....	23.00 to 24.00
Old car wheels, gross ton.....	14.00 to 14.50
Low phosphorus scrap, gross ton.....	17.00 to 17.50

## Buffalo.

BUFFALO, N. Y., April 26, 1910.

**Pig Iron.**—The market is very dull as compared with a few weeks ago, and prices are weak. There is some inquiry for foundry grades from consumers throughout New York State, which would aggregate several thousand tons if placed. The small sales made were principally of No. 2 X foundry. A moderate tonnage of malleable has also been placed during the week at prices slightly under last week's quotations. The near approach of the Erie Canal opening enlarges the distributive radius for the output of Buffalo furnaces at a low freight rate and permits of somewhat lower quotations to many Eastern points and the meeting of Southern iron competition to some extent. The quotations named for the lower grades in the schedule which is given below are substantially upon the same basis as the prices quoted by Southern furnaces. We quote as follows, per gross ton, f.o.b. Buffalo, as representing the market as accurately as possible under present conditions:

No. 1 X foundry.....	\$16.50 to \$17.00
No. 2 X foundry.....	16.25 to 16.75
No. 2 plain.....	16.00 to 16.25
No. 3 foundry.....	16.00 to 16.25
Gray forge.....	15.75 to 16.00
Malleable.....	16.00 to 16.75
Bessemer.....	17.50 to 18.00
Basic.....	16.50 to 17.00
Charcoal.....	19.25 to 19.75

**Finished Iron and Steel.**—New business continues to come out in good volume for bar material and cold rolled lines and is active on plates, tin mill products and light sheets. The local agency of the leading interest reports that in steel bar material no new contracts are being made for delivery beyond July 1, and for deliveries after that date the trade appears to be waiting on the implement makers, to ascertain prices at which their yearly contracts are taken. The demand for structural material has been comparatively light. There are, however, several good sized building propositions in the hands of architects, which will be out for figures in the course of a week or two. Bids are to be received

next week for 450 tons for the Wm. H. Hotchkiss mercantile building on Washington street, and bids will soon be asked for two large freight warehouses to be erected by the New York Central Railroad on the Buffalo River, near Michigan street, requiring considerable steel. The Lackawanna Bridge Company has received a contract for the structural steel for the New York Central car shop extension at East Buffalo, about 1600 tons, and for 100 tons for a factory addition for the Solvay Process Company, at Syracuse. Contract is to be awarded this week for the steel for the McCurdy-Norwell department store addition at Rochester. Bids are soon to be asked for a nine-story hotel at Oswego, N. Y., requiring considerable tonnage, to be erected by the Oswego Hotel Corporation.

**Old Material.**—The market is depressed, with a very small amount of business being transacted. The demand from consumers is sharply restricted to requirements for pressing needs, and there has been some further decline in prices. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$15.00 to \$15.50
Low phosphorus steel.....	19.00 to 19.50
No. 1 railroad wrought.....	16.00 to 16.50
No. 1 railroad and machinery cast scrap.....	15.00 to 15.50
Old steel axles.....	19.00 to 19.50
Old iron axles.....	22.75 to 23.25
Old car wheels.....	16.00 to 16.50
Railroad malleable.....	15.50 to 16.00
Boiler plate.....	13.00 to 13.50
Locomotive grate bars.....	12.00 to 12.50
Pipe.....	12.50 to 13.00
Wrought iron and soft steel turnings.....	8.50 to 9.00
Clean cast borings.....	7.50 to 8.00
No. 1 busheling scrap.....	13.50 to 14.00

C Furnace of the Buffalo Union Furnace Company was blown out April 27.

## Birmingham.

BIRMINGHAM, ALA., April 25, 1910.

**Pig Iron.**—The aggregate tonnage sold in this market the past week was considerably in excess of the aggregate of sales for several weeks previous, and prices are generally conceded to be on a firmer basis. As to whether or not a new price has been established by the recent heavy buying of a leading melter, a definite statement is not warranted. The quotations authorized by the selling agents are not changed and a schedule of \$12.50, Birmingham, for No. 2 foundry is understood to be the price for deliveries covering the remainder of the first half and extending into the third quarter. It is probable that lower figures than the price just named have been accepted for spot deliveries and that the \$12.50 schedule has in some cases been made to apply to the entire last half, but with the exception of a round tonnage, of which mention has previously been made, it is not believed that concessions have been made during the week just ended. The fact that the tonnage just referred to was placed with one interest indicates the indisposition of the producers to make further concessions in prices, as it is known that offers were submitted to practically all concerns at 50c. to 75c. per ton lower than the current quotation. It has been conceded generally that the trade anticipated the adoption of a \$12, Birmingham, basis for last half deliveries, with slightly lower figures for spot, and that knowing of the costs under which furnaces were now operating such prices would immediately result in an active market. Now it seems, however, that the furnace companies have concluded they cannot afford the additional concession, and as the melters are disposed to adhere to their position, the result will be awaited with interest. That present prices are not attractive to the furnace companies is indicated by the fact that a leading producer, who has adhered to a prohibitive price since the first decline from a \$15 basis, has recently reduced its output rather than make iron for the present market price.

**Cast Iron Pipe.**—To the list of lettings for early date are added round tonnages of water pipe for the cities of Kansas City, Mo., and Johnson City, Tenn. These contracts will probably come up for award within the next two weeks. The tonnage placed with local interests within the past week is of fairly satisfactory volume, and prices secured are higher than those received for two weeks previous. The demand for comparatively small lots for maintenance and extensions to water works systems has been very good, and shipments against contract in the Northwest have been resumed which have practically cleaned up accumulations of surplus stock. We quote water pipe as follows, per net ton, f.o.b. cars here, although, in view of the unsettled condition of the pig iron market, prices are more or less nominal: 4 to 6 in., \$24; 8 to 12 in., \$23; over 12 in., average, \$22, with \$1 per ton extra for gas pipe.

**Old Material.**—Practically no tonnage has changed hands in this market during the week just ended without indications for a material improvement. Dealers' asking prices are not revised, but it is believed that conditions existing

warrant a reduction of 50c. per ton on all grades, and at those prices the market is in a very unsatisfactory condition. We quote as follows, per gross ton, f.o.b. cars here:

Old iron axles.....	\$18.00 to \$18.50
Old iron rails.....	14.00 to 14.50
Old steel axles.....	17.50 to 18.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	10.50 to 11.00
No. 1 country wrought.....	10.00 to 10.50
No. 2 country wrought.....	9.50 to 10.00
No. 1 machinery.....	11.50 to 12.00
No. 1 steel.....	10.50 to 11.00
Tram car wheels.....	11.00 to 11.50
Standard car wheels.....	12.50 to 13.00
Light cast and stove plate.....	8.50 to 9.00

The Tennessee Coal, Iron & Railroad Company has blown out its No. 2 furnace at Bessemer. By this change in operations the company has in blast six furnaces on basic and two furnaces on foundry iron.

The cast iron soil pipe plant of the Beggs Pipe & Foundry Company, North Birmingham, Ala., has been closed down for an indefinite period.

## St. Louis.

ST. LOUIS, April 25, 1910.

**Coke.**—An inquiry for 2000 tons of Virginia foundry coke from a local consumer is the largest pending, and there are only a moderate number of small ones. One house reports a sale of 1000 tons of foundry coke, but business in most offices is dull. Reports of suspension of production tend to impart some firmness, especially as the decline in prices has brought the market very near to the low point of last spring. We quote standard 72-hour foundry for prompt shipment at \$2.35; for shipment over the balance of the year, \$2.50 per net ton, f.o.b. oven, Connellsville.

**Pig Iron.**—Some of the leading sales agencies report a fair amount of inquiries and sales. Among the inquiries mentioned are one for 3000 tons of Northern and Southern iron and another for 500 tons of Southern analysis. Among the sales booked were 1000 tons of Southern No. 4 for shipment over the last half; 1000 tons of Northern; 250 tons of analysis iron for prompt shipment; 500 tons of Southern No. 2 foundry for shipment over the last half and 1000 tons of Southern (mainly No. 2 foundry) for scattered delivery. There was also some business done in malleable iron for the second quarter. With some offices specifications on contract are coming in fairly well, while others report requests for postponement. The conviction is general that better prices will prevail in the fall, and therefore the leading houses do not encourage buyers to expect to be able to make contracts covering the last half at a lower price, and in some instances sales are made only subject to confirmation. There has undoubtedly been considerable iron sold short during the past 60 days, but it is believed that this feature has about spent itself owing to rumors of curtailment of production, especially as the cost of making iron is but little less, and a decline of \$3 per ton has been recorded from the high point of last fall. While some consumers may have overbought last fall, the general opinion is that there is a large consumption to be provided for in this territory for the last half. For prompt shipment No. 2 Southern foundry can be bought at \$12, Birmingham, and some brokers will book orders at that figure for the last half, while others ask \$12.50, and the representative of a leading Southern producer sells at that price subject to confirmation. Southern Ohio is quoted at \$16 to \$16.50, f.o.b. furnace.

**Lead, Spelter, Etc.**—Lead is dull, at 4.25c. Spelter is easier and offered at 5.25c., East St. Louis. Zinc ore is unchanged, at \$42 per ton, Joplin base. Tin is stronger, with 30c. per 100 lb. advance; antimony, unchanged; copper, 7½c. per 100 lb. lower. The trade in finished metals was in moderate volume last week.

**Old Material.**—The temporary shutting down of a large local foundry and of another on the east side of the river, being congested with material, helped to make the dullness of the market for the past week more pronounced. Some business is being done among dealers locally, but there is no shipping demand. The steel foundries' wants are provided for until fall or beyond. Stocks are light and no offerings by the railroads are reported for the week, but it is believed they are waiting for a better market. There has been an easing off on part of the list, but prices are still ruling higher than last spring and have not declined in the same proportion as pig iron, owing doubtless to smaller stocks being carried this year. The tone of the market is weaker. We quote dealers' prices per gross ton, f.o.b. St. Louis, as follows:

Old iron rails.....	\$15.00 to \$15.50
Old steel rails, rerolling.....	15.00 to 15.50
Old steel rails, less than 3 ft.....	13.50 to 14.00
Relaying rails, standard sections, subject to inspection.....	26.00 to 26.50
Old car wheels.....	15.00 to 15.50
Heavy melting steel scrap.....	13.50 to 14.00
Frogs, switches and guards, cut apart.....	13.50 to 14.00

The following quotations are per net ton:

Iron fish plates.....	\$14.00 to \$14.50
Iron car axles.....	21.00 to 21.50
Steel car axles.....	19.50 to 20.00
No. 1 railroad wrought.....	13.50 to 14.00
No. 2 railroad wrought.....	12.50 to 13.00
Railway springs.....	12.00 to 12.50
Locomotive tires, smooth.....	16.50 to 17.00
No. 1 dealers' forge.....	11.00 to 11.50
Mixed borings.....	6.50 to 7.00
No. 1 bushing.....	12.00 to 12.50
No. 1 boilers, cut to sheets and rings..	9.50 to 10.00
No. 1 cast scrap.....	11.50 to 12.00
Stove plate and light cast scrap.....	9.50 to 10.00
Railroad malleable.....	11.25 to 11.75
Agricultural malleable.....	10.00 to 10.50
Pipes and flues.....	9.25 to 9.75
Railroad sheet and tank scrap.....	8.50 to 9.00
Railroad grate bars.....	9.00 to 9.50
Machine shop turnings.....	9.50 to 10.00

## New York.

NEW YORK, April 27, 1910.

**Pig Iron.**—The week has been a repetition of several that have preceded, a meager business being done in foundry iron, and that in scattered lots. In Brooklyn an inquiry for 800 tons has been up and about 200 tons has been bought in this case. In Connecticut inquiries for 1000 tons or more for second and third quarter have come out. Water shipments into this district from Buffalo furnaces will not begin until about May 10, package freight having first consideration in the rush following the opening of navigation. The blowing out of five furnaces in New Jersey and eastern Pennsylvania has been decided upon—Andover, one Crane, one Thomas, one Warwick and one Carbon—which will represent a curtailment of about 1000 tons a day. While not a very drastic reduction in output, this represents the Eastern furnacemen's view of the present demands of the situation, the accumulation of stocks at the furnaces in the Eastern Pig Iron Association having increased only 2000 to 3000 tons between the third week of March and the third week of April. The falling off in new orders is a clear signal of an approaching diminution in shipments and meanwhile current prices are close to the cost line for a number of Eastern stacks. Pipe works continue to take iron where sellers are found willing to meet their low offers more than half way. We quote Northern iron at tidewater: No. 1, \$18 to \$18.25; No. 2 X, \$17.50 to \$17.75; No. 2 plain, \$17.25 to \$17.50. For Southern iron quotations are \$17.50 to \$17.75 for No. 1 and \$17 to \$17.25 for No. 2.

**Steel Rails.**—In the export trade two contracts have been closed in the past week, 18,000 tons for the government railroad in New South Wales, to be furnished by the United States Steel Products Exports Company, and 10,000 tons for the National Railways of Mexico, taken by the Maryland Steel Company. Stone & Webster, contractors, of Boston, have been in the market for 5000 tons for a Texas railroad and a number of trolley lines in New York State are figuring on small lots.

**Finished Iron and Steel.**—Prospective business, in large lots at least, is noticeably scarce, although the total of small orders and the specifications on old contracts prevent any material let-up in the activity of the mills. They have on their books now enough to keep them well occupied until July 1. The structural interests are the ones particularly keen for new business at present. Very little of importance has come up in this territory in the past week. Contracts for the steel for several small buildings have been placed, but the only really notable ones were those for the Merchants and Manufacturers' Exchange, to be erected just above the Grand Central Station, and the Potter Trust Building. The first was divided, 6000 tons for the upper part of the building being awarded to the Jones & Laughlin Steel Company, and the remainder, about 3500 tons, to the American Bridge Company. Milliken Bros. will fabricate the 1800 tons for the Potter Trust building, and 600 tons for an apartment house on Riverside Drive at 156th street. This company has also recently taken several thousand tons in transmission towers, including 1600 tons for the Southern Power Company, Charlotte, N. C. Contrary to expectations, very little of the bridge material for which the railroads are in the market has been placed. The American Bridge Company secured the Middletown bridge, 2000 tons, for the New York, New Haven & Hartford; this road still needs about 1800 tons. Most of the electric railroads have placed contracts for their season's requirements, but a fair total from smaller roads is still coming in. The general contract for an apartment house at Broadway and Ninety-eighth street, to require about 1000 tons of steel, has been awarded to Ravitch Bros. The largest local building in prospect is the one which the Bankers' Trust Company is to erect at Wall and Nassau streets. Marc Elditz & Son hold the general contract and it is expected that they will shortly ask bids on the 7000 to 8000 tons of steel which will be needed. The plate trade in the East is a little more active; the local consumers are busier than they were and April will probably close a very good month for this section of the country. Steel bar deliveries are still slow, running from three to four

months. The mills are just beginning to take contracts for beyond the third quarter. The bar iron market is the most unsteady and apparently without reason for some of the Eastern mills have about all they can handle. With the exception of bar iron all prices are firm and are quoted as follows: Plain structural material and plates, 1.66c. to 1.71c.; steel bars, 1.61c. to 1.66c., and bar iron, 1.50c. to 1.60c., all New York.

**Ferroalloys.**—Some very good sales of ferromanganese have been made in this market and one New York house has sold a large lot to a Pittsburgh consumer. The price is about \$41.50. While there are reports of low prices on ferro-silicon, New York sellers declare that they will not offer it at under \$61, Pittsburgh. One prominent seller is known to have quoted that price in response to a large inquiry.

**Cast Iron Pipe.**—With the exception of the Brooklyn letting April 28, no municipal work of importance in this vicinity is coming up for bids. Public requirements are making themselves manifest quite slowly this spring. A fair run of business from private water and gas companies is reported, but the volume of trade thus being booked is not thoroughly satisfactory. Quotations are continued at \$25.50 to \$26 per net ton, tidewater, for carload lots of 6-in.

**Old Material.**—Almost no new business is coming out. Considerable shipping is being done on old contracts, and occasional purchases are made by dealers to fill requirements of this kind which had not been covered. The rolling mills are almost completely out of the market, buying merely an occasional carload or two. Even the foundries are now taking little interest in scrap. About 1000 tons of Panama Canal scrap will be awarded this week. Dealers believe that the price paid will be much lower than for the previous offerings, in view of the depressed condition of the scrap trade. Prices are lower on almost all classes of old material, as indicated in the following quotations, which are per gross ton, New York and vicinity:

Rerolling rails.....	\$13.50 to \$14.00
Old girder and T rails for melting....	13.00 to 13.50
Heavy melting steel scrap.....	13.00 to 13.50
Relaying rails.....	21.00 to 22.00
Standard hammered iron car axles....	23.00 to 24.00
Old steel car axles.....	18.50 to 19.00
No. 1 railroad wrought.....	15.00 to 15.50
Wrought iron track scrap.....	14.00 to 14.50
No. 1 yard wrought, long.....	14.00 to 14.50
No. 1 yard wrought, short.....	13.50 to 14.00
Light iron.....	7.50 to 8.00
Cast borings.....	8.00 to 8.50
Wrought turnings.....	9.00 to 9.50
Wrought pipe.....	13.00 to 13.50
Old car wheels.....	13.50 to 14.00
No. 1 heavy cast, broken up.....	13.50 to 14.00
Stove plate.....	10.50 to 11.00
Locomotive grate bars.....	9.50 to 10.00
Malleable cast.....	14.00 to 14.50

## Labor Notes.

The Diamond Forging & Mfg. Company, N. S., Pittsburgh, Pa., maker of automobile and wagon forgings, has given a voluntary increase of 5 per cent. to all its employees, effective April 1.

The mills of the Stark Rolling Mill Company, Canton, Ohio, manufacturer of black and galvanized sheets, were closed down recently in view of the organization by a portion of the employees of a lodge of the Amalgamated Association of Iron, Steel and Tin Workers. The issues thus raised between the company and its employees have now been practically settled, it is stated, and the mill started in full Tuesday, April 26. It is announced that about 90 per cent. of the employees have re-engaged with the company with the understanding that the plant will be operated strictly non-union.

The foundrymen in the New York district, whose union molders and coremakers asked recently for an advance to \$3.50 a day, effective May 1, have made an offer of \$3.50 to molders and \$3.25 to coremakers. This represents an advance of 25 cents for each class, and maintains the differential between molders and coremakers which has existed heretofore. The unions have refused the offer.

At the works of Fried. Krupp, Essen, Germany, the Girod electric furnace is being installed for the production of high-grade steel. The contract calls for the building of five Girod furnaces, each of 10 to 12 tons capacity, and operation will be both with cold charge and with molten metal.

## Metal Market.

NEW YORK, April 27, 1910.

## THE WEEK'S PRICES.

Copper.				Lead.		Spelter.	
April.	Lake.	Electro-lytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
21.....	13.25	12.80	33.30	4.40	4.25	5.60	5.45
22.....	13.25	12.80	33.25	4.40	4.25	5.60	5.45
23.....	13.25	12.80	.....	4.40	4.25	5.60	5.45
25.....	13.25	12.75	33.05	4.40	4.25	5.60	5.45
26.....	13.25	12.75	32.85	4.40	4.25	5.60	5.45
27.....	13.25	12.75	32.90	4.40	4.25	5.60	5.45

The metal market is weaker all round. Tin has gone down 50 points in the last week, copper prices are lower, the expected spring buying movement in lead has not arrived and spelter is, if anything, slightly weaker. The situation is discouraging.

**Copper.**—The copper market is in a very unsatisfactory condition. Both electrolytic and lake are being quoted at various prices, and in the case of lake copper the recent abrupt change of front by the Calumet & Hecla Company in reducing its quotations  $\frac{1}{2}$ c. has upset things. It is very apparent that this company does not intend to take part in a movement toward restricting production, nor does it seem to be willing to make any agreement as to price maintenance. If any lake copper is being sold at present, the Calumet & Hecla Company is selling it, but it is reported in some quarters that the company has disposed of its entire output for the next two or three months. It is reported that lake copper can be bought at 13c., although many sellers declare that they will not consider an offer under 13.25c. While we quote the latter figure it is probable that a buyer can obtain some reduction on it. The exports of copper so far this month have been only 1141 tons. It is apparent that the shipments for April will be the smallest for any month in several years. The London market is especially sensitive, and in the last week the price there has dropped 5s. In London to-day spot copper sold at £56 5s. and futures were £57 5s. The market was steady, but the sales were only fair, amounting to 700 tons of spot and 800 tons futures.

**Pig Tin.**—Tin for future delivery is now being sold in New York cheaper than anywhere else in the world, spot tin selling below the cost of import. The price of spot tin in New York has gone down 50 points in the last week, but even at the present low price there is but little buying on the part of consumers. Sales are being made for delivery in June and July so cheaply that it is apparent that speculators are selling the market short. Incidentally, prices show that they could have sold short in London to better advantage, and what their object is in pounding down the New York market at their own expense remains to be seen. The London market is not quite so weak as our market, but reports made to New York houses by London agents are not very optimistic. Tin was selling this morning in New York for 32.80c., and the daily prices quoted above will show how it has gone down all the week. Pig tin sold in New York this afternoon for 32.90c. In London the market closed with pig tin £150 5s. for spot and £151 7s. 6d. for futures. Sales were very light, amounting to only 100 tons of spot and 350 tons of futures, but the market was firmer than yesterday.

**Tin Plates.**—The demand for tin plate continues good, and this is the only bright spot in the metal market. The mills have been able to catch up a little on their deliveries because of increased production, and buyers here find it easier to get their orders accepted. Reports from Swansea state that two new large tin plate mills have been completed and are in operation in the Welsh district, and six other mills are in course of construction. This will relieve the situation there, as the demand for tin plate abroad has been almost as heavy as in this country. In New York the price is \$3.84 for 100-lb. coke plates, and the price for tin plates at Swansea is unchanged at 13s. 1½d.

**Lead.**—The expected spring buying movement in lead is not here yet, and it is very apparent that consumers are looking for a reduction in price. Prices are being maintained, but there is so little demand that they might be considered nominal, and what outside sellers would do should attractive business be offered is hard to tell. Lead is now selling at 4.40c., New York, and 4.25c., St. Louis.

**Spelter.**—Very little spelter is being bought and the price in New York is quoted at 5.60c. There have been reports of offerings under that price, and it is evident that some shading is being done. Consumers have little faith in the situation. They remember that the price was recently sent up by the smelters, and they fear that quotations are still somewhat inflated.

**Antimony.**—Antimony, if anything, has weakened. Hallett's is quoted at 8.25c. and Cookson's at 8.37½c., while other brands can be had at 8.50c. Some sales at slightly less than the prices quoted have been reported, but they are not verified.

**Old Metals.**—The market is unsettled. Dealers' selling prices are quoted as follows:

	Cents.
Copper, heavy cut and crucible.....	12.25 to 12.75
Copper, heavy and wire.....	12.00 to 12.50
Copper, light and bottoms.....	11.00 to 11.50
Brass, heavy.....	8.75 to 9.00
Brass, light.....	7.25 to 7.50
Heavy machine composition.....	11.50 to 11.75
Clean brass turnings.....	8.00 to 8.50
Composition turnings.....	10.00 to 10.25
Lead, heavy.....	4.05 to 4.20
Lead, tea.....	3.80 to 3.95
Zinc scrap.....	4.25 to 4.50

## Iron and Industrial Stocks.

NEW YORK, April 27, 1910.

The stock market has been unsettled since last report and prices steadily declined, with special weakness shown on Monday and Tuesday under the stress of news of crop damage from freezing weather and heavy engagements for the shipment of gold abroad, indicating continued unfavorable conditions in our foreign trade, as well as unsatisfactory reports from various branches of domestic trade. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com...	10½-10½	Railway Spr., pref.	102½-104½
Allis-Chalm., pref.	36½-37½	Republic, com....	83½-80½
Beth. Steel, com...	28-30	Republic, pref....	99-99½
Can, com.....	10-10½	South. I. & S., com....	19½
Can, pref.....	72½-75	Sloss, com.....	73½-75½
Car & Fdry, com...	60½-63½	Pipe, com.....	20½-23
Car & Fdry, pref.	110-117	Pipe, pref.....	72½-73½
Steel Foundries...	57½-61½	U. S. Steel, com....	81½-84½
Colorado Fuel.....	38-40½	U. S. Steel, pref.	119½-121½
General Electric...	148½-150	Westinghouse Elec.	62-66
Gr. N. ore cert....	65-68	Va. L. C. & C.....	58-59
Int. Harv., com...	92½-95	Am. Ship, com....	78½-79½
Int. Harv., pref.	121½-122½	Chi. Pneu. Tool....	41½-43½
Int. Pump, com...	43-45½	Cambria Steel....	47½-48½
Locomotive, com...	48½-51	Lake Sup. Corp....	23-24½
Nat. En. & St., com.	21½-22½	Warwick.....	11½-11½
Pressed St., com...	40-41½	Crucible St., com...	13½-14½
Pressed St., pref.	100-102½	Crucible St., pref.	85½-86½
Railway Spr., com.	39-40	Harb.-W. Ref., pref.	94

Last transactions up to 1 p.m. to-day are reported at the following prices: Allis-Chalmers common 10½, preferred 37½; United States Steel common 83½, preferred 120, bonds 104; Car & Foundry common 61, preferred 116; Locomotive common 50, preferred 113; Colorado Fuel 38½; Pressed Steel common 40½, preferred 100; Railway Spring common 39½; Republic common 34½, preferred 90; Sloss-Sheffield common 74; Cast Iron pipe common 21½, preferred 72½; Can common 10, preferred 73½.

The directors of the Pennsylvania Steel Company have authorized an issue of \$4,087,500 additional 7 per cent. cumulative preferred stock, to be offered at par to stockholders in amounts equal to 15 per cent. of their holdings. The proceeds will be used for various extensions and improvements. There is now outstanding \$16,500,000 preferred and \$10,750,000 common stock.

The Pittsburgh Coal Company has issued a report showing that the operations of the company for the first three months of 1910 resulted in net earnings of \$145,271, against a net loss for the same quarter of 1909 of \$165,454.

## German Iron Market.

BERLIN, April 14, 1910.—The combination controlling the production of heavy plates voted several days ago to raise prices 2.50 marks per ton, to take effect immediately. The new price, which was adopted for the third quarter and on all supplementary orders for the current quarter, is 120 marks. This is the only price advance to be reported this week. The meeting of the bar makers, referred to in a previous letter as likely to vote higher prices, occurred last week, but no change in prices was made. Contracts for the third quarter at the old terms were declared open for business. The convention covering wire rods and wire has voted to suspend action on prices for the third quarter until it shall be seen what prices will be adopted by the Steel Syndicate for semi-manufactured steel.

According to reports from the Belgian market this week the efforts of speculators to depress still further the prices of commercial forms and plates have been effectively resisted by manufacturers. The quarter's production of pig iron in Belgium reached 440,800 metric tons, against 335,310 tons in the same quarter of last year.

The amount of new capital absorbed by the German iron trade during the first quarter of the year was unusually light. The figures, which also include coal and salt mines, amounted to only \$2,150,000, comparing with \$7,170,000 for the previous quarter, and \$9,630,000 for the first quarter of 1909.

The Petroleum Iron Works Company, Sharon, Pa., is increasing its capacity. It is installing three high pressure hydraulic riveters, a 50-in. rotary planer, plate planer, radial drills and a Linde oxyacetylene welding plant. The company has recently received numerous new contracts for steel plate construction work.

## Trade Publications.

**Boiler Tube Cleaner.**—Liberty Mfg. Company, 6910 Susquehanna street, Pittsburgh, Pa. Bulletin No. 23. Describes and illustrates a type of freely swinging arm head for cleaning water tube boilers in which no rivets are used. The claims for this type of construction are that in case any part breaks it is possible to remove and replace it without the use of any tools and in a very short time. An illustrated description of this head was printed in *The Iron Age* April 14, 1910.

**Shapers.**—The Queen City Machine Tool Company, Cincinnati, Ohio. Loose leaf catalogue. Describes a line of back geared shapers which are made in three sizes having strokes of 16, 20 and 24 in. respectively. The advantages claimed for these shapers are extreme accuracy, convenience of operation, durability, and the removal of more metal at the expenditure of less power per cut. Each of the three models is illustrated and described and in addition there are a number of drawings showing constructional details of the different parts. An illustrated description of the 24-in. model appeared in *The Iron Age* April 7, 1910.

**Boring and Turning Mills.**—Colburn Machine Tool Company, Franklin, Pa. Catalogue A 1. This is the company's 1910 catalogue describing and illustrating the Colburn new model boring and turning mills. These machines are built in five sizes ranging from 42 to 72 in. swing and are regularly equipped with two swivel heads, although if desired they can be equipped with one swivel head and one turret head. *The Iron Age* December 30, 1909, contained an illustrated description of the 60-in. mill equipped with two swivel heads.

**Bolt, Nut and Forging Machines.**—The Acme Machinery Company, 4533 St. Clair avenue, N. E., Cleveland, Ohio. Catalogue. Deals with a line of bolt cutters for threading one, two, three and four bolts simultaneously. The nut tappers will tap either square or hexagonal nuts four or six at a time, in sizes ranging from  $\frac{1}{4}$  to 2 in. Other machines illustrated and described are those for pointing bolts and studs, forging and heading bolts and a high speed machine for making rivets and track bolts. Brief specifications of each of the machines are given on the pages facing the illustrations, and a number of pieces made by the heading and forging machine are shown.

**Combination Planer, Matcher and Molder.**—American Saw Mill Machinery Company, Hackettstown, N. J. Circular. Pertains to the American Triumph planer, matcher and molder, which was illustrated and described in *The Iron Age* April 14, 1910. This machine is made in two sizes for taking stock 20 and 24 in. wide. The machine is said to be very compact and rigid, is designed to economize space and withstand hard usage, and is intended for use in saw or small planing mills where the power and room are limited and a machine is required to handle a large variety of work.

**Grindstones.**—The Cleveland Stone Company, Cleveland, Ohio. Catalogue No. 10. Devoted to a line of Berea, Lake Huron, Nova Scotia and Bay de Chaleur grindstones. These include mounted grindstones and a number of different styles of hand stones. The different sizes and brands are illustrated, together with a line of grindstone fixtures.

**Obnoxious Vapor Condenser.**—Schutte & Koerting Company, Philadelphia, Pa. Catalogue No. 4, Section B. Illustrations and descriptive matter explain the operation of the Koerting obnoxious vapor condenser, which is designed to eliminate the obnoxious fumes and gases arising from establishments in different branches of the chemical industry, such as packing houses, rendering establishments, fertilizer works and cotton oil factories. *The Iron Age*, April 14, 1910, contained an illustrated description of this device.

**Ventilating Apparatus.**—The New York Blower Company, Twenty-fifth place and Stewart avenue, Chicago, Ill. Catalogue No. 65; size 6 x 9 in.; pages 80. Lists the different types of fans and heaters made by this company. The former include steel plate fans with three-quarter and full housings, vertical and horizontal discharge openings and plain or water jacketed bearings, cone fans and single or double reversible fan blowers and exhausters. The heaters are designed for the hot blast system and have coils which are upright and also of the mitred type. A number of tables of useful information are appended.

**Blowers and Forges.**—Champion Blower & Forge Company, Lancaster, Pa. Catalogue; size  $4\frac{1}{4}$  x  $6\frac{1}{4}$  in.; 280 pages. Gives descriptions and specifications for steel blowers and forges, lever and crank blowers, electric blowers and forges, portable forges, blacksmiths' and power drills, screw plates, taps and dies, blacksmiths' appliances, steel pressure blowers, fan blowers and exhaust fans. Each of the different tools is described at more or less length and this description is supplemented by an illustration.

**Drilling and Tapping Machines.**—The Cincinnati-Bickford Tool Company, Cincinnati, Ohio. Catalogue. Refers to the Cincinnati line of heavy pattern upright drilling and tapping machines. More or less complete illustrated descriptions with specifications and dimensions are given for each of the machines which go to make up the line. *The Iron Age* Septem-

ber 9 and October 28, 1909, printed illustrated descriptions of the Cincinnati high speed drilling and tapping machine and the Cincinnati-Bickford 20-in. gang drill, respectively.

**Car Replacers.**—Alexander Car Replacer Mfg. Company, Scranton, Pa. Pamphlet. Illustrates the use of the Alexander pressed steel car and engine replacer and contains a list of the sizes made. The railroads using this device and a list of agents are included.

**Steam Specialties.**—W. K. Mitchell & Co., Ellsworth street and Schuylkill River, Philadelphia, Pa. Five circulars. These deal with a line of welded steel steam separators designed especially for use with superheated steam in connection with steam turbine installations, the Murdock improved lap joint, which is made with cast iron or cast or rolled steel flanges for all sizes of pipe from 4 to 24 in., welded steel manifolds for refrigerating work, which it is claimed eliminate all kinds of fittings with sweated and soldered joints and thus cut down the weight of the manifolds and eliminate all possibility of leakage, and welded steel headers, nozzles and flanges, for which the advantages claimed are a reduction in the number of joints, the elimination of heavy fittings and a decreased cost.

**Motor Cars for Railroad Work.**—Fairbanks, Morse & Co., Chicago, Ill. Catalogue No. 101-B. Calls attention to two new models of gasoline motor cars for railroad inspection work. One of these is a combination hand and motor car which is so arranged that the engine can be disconnected and the car propelled by hand or the hand lever can be thrown out of gear and locked in one position while the car is operated by the engine. The other car is of the direct-connected type and has a two-cylinder, two-cycle air cooled engine direct connected to the rear axle. A number of models for light inspection service and passenger traffic are also illustrated.

John Helmuth & Co., 30 Church street, New York, have been appointed by William Cooke & Co., Ltd., Sheffield, England, as American representatives for the sale of their refined bar iron and high carbon steel rods. As these products have gained a high reputation in the British market, the manufacturers have been encouraged to increase their capacity for the special purpose of extending sales into other markets, particularly America.

The Buffalo & Susquehanna Iron Company was merged in the Rogers-Brown Iron Company April 22, and all of the property, rights, privileges and franchises of the former company have thereby vested in the latter. The Rogers-Brown Iron Company, Erie County Bank Building, Buffalo, N. Y., will conduct the business heretofore carried on by the Buffalo & Susquehanna Iron Company.

The Northwestern Iron Company, Mayville, Wis., expects to have its new furnace, which takes the place of an old one, ready to be blown in about June 1. The new furnace will have a daily capacity of 300 tons and will be fitted throughout with modern equipment, including skip hoist, steel trestles and bins.

Ladd & Baker, Inc., Philadelphia, Pa., have recently issued rights to the Bethlehem Steel Company, South Bethlehem, Pa., for the use of the Baker-Neumann distributor for four additional blast furnaces. When these furnaces are completed there will be five at that company's plant equipped with the device.

Irving N. Colby, Granville, Ill., has recently enlarged his foundry, and will engage in the manufacture of cast iron sectional road culverts in addition to gray iron castings up to 2 tons weight.

The sales office of the Railway Steel Spring Company in Chicago, now at 1380 Old Colony Building, will be located after May 2 at 1111 People's Gas Building.

The Cleveland Twist Drill Company announces the removal May 1 of its Chicago branch to 9 North Jefferson street. Improved facilities are provided in the new location.

## THE MACHINERY MARKETS.

In the East a good business is being done, and orders for machinery to cover some extensive lists sent out of late are being placed, but there are no new inquiries of any great moment before the trade. New manufacturing enterprises are coming forward, however, which should call for heavy expenditures for machinery. In Chicago there are no lists of any consequence, but railroads are buying individual tools and business there is just a shade better. The Milwaukee machinery market has taken a sudden upward trend and some good sized contracts for mining equipment, mill machinery, furnace and smelting apparatus have developed. Skilled labor in that territory seems to be hard to get. The demand for saw mill machinery is especially good in the South, but in other lines inquiries have fallen off. Business in the Gulf States is better than in other sections, and the demand for metal working machinery there is especially good. The lumber industries and municipal water plants are calling for most of the machinery on the Pacific Coast. In the Central West and in the Northwest trade is only fair, but in the latter section the indications are that the demand for hydroelectric equipment will be very good within the next few weeks. Pittsburgh is selling considerable machinery, especially in the way of large power units, while the boiler and tank manufacturers there are rushed with work. The foundries in Detroit are busy, but other lines are quiet. It is reported from Philadelphia that the Pennsylvania Railroad will build new boiler shops at Renova, Pa., and the trade there is looking forward to some buying in consequence.

### New York.

NEW YORK, April 27, 1910.

Machinery houses in the Metropolitan district are doing a good business, although the volume of inquiries is not large. The trade is filling orders on bids which have been made on good sized lists sent out by the railroads and other interests during the last few weeks. The New York Central Railroad is the principal buyer right now. Instead of following its usual rule in sending out lists, this company has sent out inquiries by a new method for the Central at least. Duplicate pages asking for bids have been made out, and in each case inquiries were confined to one machine to a page. Some companies which specialize on one kind of a machine have received but one page, while other dealers who have large connections have received numerous pages, each page asking for one bid on a particular machine. A careful canvass of the trade shows that so far 60 pages have been sent out, and the inquiries now before the trade amount to fully \$75,000. These machines are required, it is understood, for the West Albany shops, and it is thought that more inquiries will follow. Some time ago the New York Central made an appropriation of \$300,000 for machine tools, and this will all be spent within a few months. Estimates made by selling men who have visited the West Albany shops go to show that about \$100,000 worth of machinery will be required there, and, judging from this, the present buying movement of the company will call for an expenditure of that amount at least. There is considerable speculation in the trade as to what the Southern railroads are doing. Machinery men who watch that territory have reported that lists have been prepared by a number of small roads, but for some reason they are being held up.

A decidedly good demand exists for mill supplies and repair parts. Foundries are being asked to make quick deliveries on machine castings which are needed for repairs, and machinery manufacturers in general are experiencing a heavy demand for parts of their equipment. The export business is better than it has been in some time, and some good orders for shipment to South Africa have been coming in of late. A good deal of this business is for mining machinery, but the demand for general mill supplies from that territory is excellent. The United States Light & Heating Company, 30 Church street, New York, is taking orders for equipment for a large plant to be built at Niagara Falls, N. Y., and some good business should come to the machinery trade in this territory from that source. The Simonds Mfg. Company is building a large plant in Lockport, N. Y., which should also call for a good line of equipment.

The United States Light & Heating Company, 30 Church street, New York, has purchased a 20-acre site in Niagara Falls and has awarded the contract for the construction of buildings that will occupy about 10 acres to Snyder & Gillette of that city. Ground was broken April 22. The cost of the plant, exclusive of equipment, will be about \$300,000. Over 1500 hands will be employed at the outset, the number to be gradually increased as demands make it necessary. The plant will be located at the north end of the city and the electric current supply of about 1000 hp. will be furnished by the Niagara Falls Hydraulic Power & Mfg. Company. In all there will be 16 buildings. Two will be 40 x 246 ft., two stories; two 50 x 80 ft., three stories; one 50 x 100 ft., two stories; one 50 x 144 ft., one story; one 50 x

144 ft., one story; one 52 x 112 ft., one 40 x 136 ft., one 50 x 298 ft., three 60 x 176 ft., and one 18 x 75 ft. The buildings will be of concrete and brick construction. The United States Light & Heating Company has contracted with the Harrison Engineering Company of New York for the heating and ventilating of its plant. The buildings are to be heated throughout by Harrison Aertube heaters. Producer gas will be burned for fuel, and the heaters will utilize the waste heat from the many lead melting furnaces. The air, of which 120,000 cu. ft. will be supplied per minute, will be distributed throughout the buildings by special electric cone fans. Switching facilities will be furnished by the New York Central Railroad and the Rome, Watertown & Ogdensburg Railroad. The United States Light & Heating Company is a merger of the National Battery Company of Buffalo, N. Y.; the Bliss Car Lighting Company, Milwaukee, Wis., and the United States Light & Heating Company of New Jersey. W. H. Silverthorne is president of the company; Julius E. French, Edwin Hawley and C. A. Starbuck, vice-presidents, and W. S. Crandall, secretary-treasurer. The company was incorporated in January, 1909, under the laws of Maine. The output will be batteries for car lighting and heating. No less than 35 railroads are using or have contracted to use the company's system or apparatus.

The Simonds Mfg. Company, with factories at Fitchburg, Mass., Chicago, Ill., and Montreal, Canada, has completed plans for the erection of a steel mill at Lockport, N. Y. The new site embraces 65 acres, on which will not only be located the manufacturing plants, but also dwellings for the company's employees, clubroom, hospital, &c. All the machinery is to be electrically driven with power obtained from Niagara Falls. The initial investment will be over \$250,000, and it is the intention of the company to install only the best equipment. In addition to the three plants mentioned above, the Simonds Mfg. Company has branch offices in New York, Portland, Ore., Seattle, Wash., New Orleans, La., San Francisco, Cal., Vancouver, B. C., St. Johns, N. B., and London, England, in each of which a full stock of its well-known saws, machine knives, files, &c., is carried. It is the intention of the company to have the Lockport plant in operation by October 1.

The Public Service Commission of New York is giving out specifications for new subways to be built in the city, and a number of large contracting firms are going into competition for the work. The Bradley-Gaffney-Steers Syndicate intends to compete for the Broadway-Lexington avenue route, which will constitute the larger part of the work, and is prepared, it is said, to offer to build a line with its own capital if necessary. A public hearing will be given on the subway proposition on May 9, and it is expected that shortly after that time matters will be settled so that the contracts can be awarded.

The Russell, Birdsall & Ward Bolt & Nut Company, whose main factories are at Port Chester, N. Y., is erecting two new buildings at Rock Falls, Ill. One of these structures is to be three stories, 60 x 150 ft., and the other one story, 75 x 150 ft. Both buildings are to be equipped with automatic sprinklers and it is expected they will be ready for occupancy about May 1. The company has just completed a four-story building at Port Chester, 50 x 180 ft.

The Great Lakes Engineering Works, Detroit, Mich., has been awarded a contract of \$50,000 to furnish the machinery equipment for an ice plant to be built for the Webster-Citizens Ice Company at Essex street, near Richmond ave-

nue, Buffalo, N. Y. The plant will be contained in a one-story building, 110 x 157 ft., and will cost \$20,000.

Although definite plans have not yet been announced, it is understood to be the purpose of the Lehigh Valley Transit Company, Allentown, Pa., to expend a large sum of money this year for improvements, including the purchase of new electric generating machinery and accessory apparatus.

John T. Lindstrom, Allentown, Pa., in addition to the manufacture of steam separators, traps, &c., has a unique department, which is found very convenient by users of power machinery. He rebores, in their present positions, all types and sizes of steam engine cylinders, Corliss valve pockets, pumps and air compressors; also turns off and crowns flywheels of any size on engine shafts.

The A. J. Bolton Company, Rochester, N. Y., will extend its system of electric drive by the installation of a line of direct current motors.

The Board of Water Commissioners of Atlantic City, N. J., announces that it will receive bids until May 3 for furnishing and installing an alternating current generator of 150 k.v.a., with exciter dynamo, transformers and switchboard. These are for service in what is known as the Abscon pumping station.

Among the orders for equipment placed this season by Henry Steers, Inc., New York City, who do a large contracting business, is one for a complete new stone crushing plant.

Equipment for a substation of the power plant, including rotary converter and air blast transformer, is reported to be required by the Albany & Hudson Railroad Company, Albany, N. Y.

The recently incorporated Hunterdon Electric & Power Company of High Bridge, N. Y., will furnish electric light and power in High Bridge. The company is controlled by the Taylor Iron & Steel Company and it has a plant already established.

The Century Iron & Steel Company has been incorporated at Buffalo, N. Y., with a capital of \$10,000, and has established a plant in the Ross Mfg. Building, 1445 Niagara street, for the manufacture of special gray iron and steel castings for motor trucks, automobiles, motor boats and general machinery. Wm. J. Wark is president and manager.

The Kimo Shoe Polish Company, Buffalo, N. Y., will erect and equip a two-story brick and concrete factory, 48 x 150 ft., at Main street and Fillmore avenue.

The Rome Mfg. Company, Rome, N. Y., has let contract for construction of its brass specialty factory, 60 x 300 ft., two stories, which it will build at a cost of \$45,000.

The New York Central Railroad Company is receiving bids for two large warehouses to be erected on the Buffalo River at Ohio street, Buffalo, each 200 x 200 ft., two stories, of steel and brick, with special equipment of loading, unloading and handling machinery. One warehouse to be occupied by the Western Transit Company steamship lines and the other by the Knowlton Warehousing Company.

The New York Central Railroad Company is receiving bids for a brick and steel car shop building, 60 x 185 ft., to be erected at Oswego, N. Y., at an estimated cost of \$80,000. Geo. W. Kittredge, engineer, Forty-second street and Madison avenue, New York City.

The Standard Stained Shingle Company, formerly located at Rochester, has purchased a site at Tonawanda, N. Y., on the Erie Railroad and Ellicott Creek, at Fillmore street, and will build and equip a plant having a capacity of 500,000 shingles per day. Harry E. Gosch, Delawanda, N. Y., is president.

The Department of Public Works, Buffalo, N. Y., Francis G. Ward, commissioner, room 1, City Hall, is receiving bids for building a mixing floor, chutes and extension of present continuous belt conveyor system at the City reclamation and utilization plant on Hamburg street.

The New York Central Railroad is receiving bids for an addition to its car shops at East Buffalo, 272 x 401 ft., one story, 21 to 30 ft. high, steel, brick and concrete construction; also an addition to the planing mill, 40 x 75 ft., of concrete and brick. Additional machinery equipment will be required.

The Niagara Electro-Chemical Company, Niagara Falls, N. Y., Daniel E. Parker, president, is arranging to build an addition to its plant on Buffalo avenue.

The Niagara Machine & Tool Company, Buffalo, N. Y., has completed plans for and will soon commence construction of a foundry, forge building and pattern shop, 180 x 225 ft., one and two stories, on the site of its new plant at Northland avenue and the New York Central Railroad Belt Line.

The Dahlstrom Metallic Door Company, Jamestown, N. Y., which is having an addition to its plant erected, announces that the new building will be used principally for finishing purposes. The company will not buy equipment at once, but will add such metal working machinery as it needs from time to time.

The Bossert Electric Metal Stamping Company, Syracuse, N. Y., is making an extension to its plant.

The plant of the Chandler & Price Printing Press Company, Rochester, N. Y., recently suffered an estimated fire loss of \$15,000.

The Anthony Company, 45 West Thirty-fourth street, New York, has taken over as licensee the manufacture and sales of the oil burners and oil burning equipment of the American Combustion Company. The company will continue the development and marketing of the latter devices and will develop certain other inventions.

L. O. Koven & Brother are adding a \$40,000 building to their plant on the Paterson Plank Road, Jersey City, N. J. The addition will be 80 x 195 ft. and will be used for boiler and sheet iron work. About 70 men will be added to the force. During the summer it is also the intention of the firm to build a power house and gas producing plant.

#### Catalogues Wanted.

Jules Girard, Maison Rouge de Saint Marion, Boussac Creuse, France, desires catalogues of machine tools and wood-working machinery.

### Chicago.

CHICAGO, ILL., April 26, 1910.

There is a fair amount of business in the Chicago machinery market, and while there are some uncertain features and buying by railroads is disappointing there is a general improvement in the number of inquiries and the business done. Machinery men in this part of the world have given up any expectations of a boom but they feel confident of a general increase in their business during the year. The railroads are really buying more tools, but they come in for one or two machines at a time and no business of consequence has been done on the large lists that have been pending for several months. Men familiar with the railroad trade, however, are confident that it will come sometime this summer as the roads will need a large amount of new shop equipment before their heavy traffic begins next fall.

The automobile business is coming forward again as an important factor in the machine tool trade. Many of the automobile manufacturers are buying milling machines now for delivery next fall and winter, as well as other tools which they will require to increase their facilities for 1911. One Chicago house sold tools amounting to \$25,000 to one automobile concern last month. The machinery men are getting over their pessimistic feeling in regard to the future of the automobile trade. Last year they all expected it to go like the bicycle business and it was even predicted freely that there would be more tools coming back from the automobile trade this year than going out on new sales. The automobile, however, has found a way around the hole in the road which threatened the industry. While the demand from the cities for "joy wagons" is becoming satisfied, the farmer has come into the business and is buying more automobiles than are being sold for use in the cities. In the country there is an economic use for the automobile, as the farmer has to do a great deal of traveling in the course of a year and a car that gets over the ground quickly is not much more expensive to him than horses. Farmers who wanted a year's credit on a cheap buggy 15 years ago can pay cash now for a \$1000 or \$2000 automobile, and this trade furnishes a broader and safer foundation for the industry than the city demand for mere pleasure or recreation.

The Stover Engine Works, Freeport, Ill., advises that it will commence work immediately upon the erection of a new factory building.

The Wabash Mfg. Company, Wabash, Ind., will remove its plant to Terre Haute, Ind. The company is installing in its new location a 125 hp. boiler and a 100 hp. engine, and expects to add a generator to operate an electric welding machine and lighting system. The company will employ about 100 hands, and will manufacture the same line as heretofore.

John T. Cunningham, 2311 West Van Buren street, Chicago, has purchased a plot 74 x 168 ft., on Ashland boulevard which he will improve by the erection of a building of steel and concrete construction at a cost of \$80,000, which he will use as an ice cream plant. The plant will be equipped with machinery at a cost of about \$5000.

Sebastian Krug, Chicago, has purchased the entire block bounded by West Thirty-fifth and West Thirty-sixth streets on the north and south and by Butler street and Parnell avenue on the east and west, which he will improve by the erection of two factory buildings at a total cost of \$70,000.

The Rock Island Mfg. Company, Rock Island, Ill., has had plans prepared for extensions to its foundry, machine and blacksmith shops. All additional equipment for the foundry and blacksmith shop has been purchased, but some new tools will be required for the machine shop.

The Hummer Mfg. Company, Springfield, Ill., has been organized to do a general repairing and manufacturing business, and will give special attention to the designing and model building of small high class machinery.

The Quick Meal Stove Company, St. Louis, Mo., is receiving bids for the erection of the following nine buildings: Receiving department, pressing shop, sheet metal shop and office building, one and two story, 166 x 249 ft.; machine

shop and locker room one and two story, 102 x 252 ft.; japanning shop, one story, 73 x 100 ft.; nickel plating shop, one story, 99 x 101 ft.; gas range mounting and gasoline stove factory, two story, 59 x 200 ft.; shipping room, two story, 184 x 200 ft.; boiler and engine room, one story, 53 x 94 ft.; enameling shop, one story, 62 x 108 ft.; brass foundry, one story, 108 x 141 ft.

The International Steel & Iron Construction Company, Evansville, Ind., whose plant has been enlarged twice within the past year, is considering additional improvements.

The Griffith & Son Company, Muncie, Ind., will soon receive bids for the erection of a one story factory building 40 x 120 ft.

The Connorsville Light, Heat & Power Company, Connorsville, Ind., which is operating a Curtis steam turbine and generator of 500 kw., with three smaller engine driven units, has provided funds for an increase in capacity, probably by the purchase of one or more additional turbines.

The International Harvester Company, Chicago, has foundations in and will soon be ready for bids for material for the erection of a machine shop 120 x 161 ft., two story, and a forge shop 121 x 141 ft.

With completion of its extension to Frankfort, the Kokomo, Marion & Western Traction Company, Kokomo, Ind., will probably need to add a third steam turbine unit of 500 or 1000 kw. to its power station, although it now has some reserve capacity.

The Globe Stove & Range Company, Kokomo, Ind., will require considerable power and electrical machinery, blowers, &c., in connection with a new factory building.

The Knoblock-Heideman Mfg. Company, South Bend, Ind., advises that it has arranged for all equipment to be installed in its new addition and is not in the market at this time.

The Kokomo Brass Works, Kokomo, Ind., will erect an addition to its foundry, 75 x 87 ft.

The Tudhope Motor Company, Ltd., Orillia, Ont., recently organized to manufacture a standard touring car of 30 hp., is erecting a factory which will be equipped to manufacture all parts. The company is figuring on its machinery requirements with a view of getting work under way as rapidly as possible.

The name of the Ostermann Mfg. Company, West Pullman, Chicago, has been changed to the West Pullman Car Works.

The Fort Wayne Auto-Motor Company, Fort Wayne, Ind., has been organized and incorporated with \$50,000 capital stock to manufacture automobiles, engines and auto parts. The directors are F. L. Jones, A. D. Cressler, H. P. Scherer, J. B. Reuss and D. B. Douglass.

The Concord Paper Company has been incorporated at Elkhart, Ind., with \$100,000 capital stock to manufacture paper. The directors are Jacob Winter, Max Goldberg and W. C. Roose.

The Journey Mfg. Company has been organized at Portland, Ind., and incorporated with \$50,000 capital stock to manufacture wagon trucks, sleds, &c. The directors are William I. Journey, John K. Journey, Albert J. Journey, W. C. Hoover and A. A. Adair.

The Otis Elevator Company is going to add another large building to its plant at Peru, Ind. J. W. Parkhurst is manager at Peru.

The Terre Haute, Indianapolis & Eastern Traction Company has the plans drawn for a new power plant to be erected in Indianapolis, Ind., to cost \$1,000,000. New car shops are also contemplated as a result of the recent purchase by the company of the Traction & Terminal Company's street railway system in Indianapolis. The power plant is to have a capacity of 40,000 kw.

The Campbell, Wyant & Cannon Foundry Company, Muskegon, Mich., has purchased the Enterprise Foundry Company of that city, which it will improve by rebuilding to suit its requirements. The following list of equipment will be installed, none of which has been purchased as yet: Molding machines; two 36 x 60 exhaust mills, complete; one heavy foundry grinding stand; one air compressor, 300 ft. capacity, 440 A. C. 3 phase, 30 cycle, direct pinion drive, complete with tank; two interchangeable 3000-lb. truck ladles, with 200 ft. single track, 5 ton capacity; three turntables about 48 in. in diameter, not grooved; one 2-ton elevator, electric driven, self-contained, with voltage 440 A. C., 3 phase, 30 cycle; four 150 lb. bull ladles, with one end swivel; two 200 lb. bull ladles, with one end swivel; six hand ladles, 60 lb. capacity, welded flat bottom; one centrifugal sand mixer; one transverse machine, 5000 lb.

## Philadelphia.

PHILADELPHIA, Pa., April 26, 1910.

The market shows no particular activity in any direction, and while there is a fair amount of business pending, it appears to lack snap. The larger propositions which have been before the trade for some little time do not close as freely as might be desired, and such transactions as are to be noted are mostly of the smaller character. Heavy en-

gine builders report much of the same conditions; orders taken recently have been small, but the majority of builders have sufficient business on hand, booked during the recent more active period, to keep them well employed. There appears to be no diminution in the call for electric cranes, and builders of this class of equipment are quite actively engaged and find it difficult to meet customers' demands for deliveries.

Railroads in this immediate vicinity are slow in reaching a decision as to pending tool purchases. Occasional orders for odd tools are placed, but a good volume of business under consideration in a general way has not yet been released. It is understood that the Pennsylvania Railroad has decided to go ahead with improvements to its Renova, Pa., shops, particularly in connection with an addition to its boiler-making department, which should result in purchases for equipment adapted to that class of work. There has been no slackening in point of activity on the part of machine tool builders, many of whom have enough business on their books to keep them well engaged for some months ahead.

Foundries, both gray iron and steel, are comparatively well employed, and in some instances a better volume of business is reported. The recent demand of the molders and coremakers in many of the local foundries for an advance in wages is still under consideration. Counter propositions were made by many of the individual foundrymen, which, it is understood, are to be acted upon by the molders at an early date. The second-hand engine, boiler and machinery trade moves slowly. There is a fair day to day demand for some classes of equipment; in others, however, inquiries are comparatively light.

The Keystone Lubricating Company has broken ground at the corner of Twenty-first and Clearfield streets, where it will erect a two-story factory building, 200 x 225 ft. While some of the equipment has been purchased, it is in the market for a 30-hp. gas engine, a 80-hp. horizontal return tubular boiler, valves, fittings, shafting, &c.

Sealed proposals will be received by the Building Committee of the State Hospital for the Insane, Norristown, Pa., until May 6 for the erection of a laundry building. The contractor to furnish all materials, labor, &c., erect and complete the building according to specifications, which may be seen at the steward's office, State Hospital, Norristown, Pa.

The Standard Pressed Steel Company is making a number of minor improvements to its plant whereby its capacity will be increased about 50 per cent. Additional presses have been installed and the capacity of its power plant materially increased. This concern reports business as very active, the demand for its pressed steel shaft hangers, both domestic and foreign, steadily increasing. Heavy export shipments have been made recently to Austria, Holland, Switzerland, New Zealand and Java.

The Southwark Foundry & Machine Company notes a decrease in immediate orders, although there is a very satisfactory volume under negotiation, which develops into business rather slowly. Its plant is actively engaged on a general run of orders which have been taken during the past few months.

The American Pulley Company is now placing on the market extra large sizes of its all wrought steel pulleys, running from 50 to 60 in. in diameter. These are of special design, reinforced for heavy duty. The demand for its standard pulleys continues very good, a recent order for 150 of miscellaneous sizes for export to Manila, P. I., being noted. Its sash pulley department is running overtime in order to meet the heavy demand for that class of pulleys.

The crane shop of the Niles-Bement-Pond Company, Philadelphia, reports sufficient orders ahead to keep the plant fully engaged for the next six months. Inquiries for electric traveling cranes and hoists continue heavy, and they find it difficult to meet customers' demands for delivery.

The George V. Cresson Company is extremely busy in all its various lines of product. Order books are well filled and it is working overtime in many departments in order to meet deliveries, which in instances are delayed owing to inability to obtain good shipments of crude materials.

R. W. Barwood, recently connected with Daniel Nast, machinery merchant, Bourse Building, is now associated with the selling forces of the Vandyke-Churchill Company's Philadelphia office.

The Water Commissioners of Trenton, N. J., are considering the subject of a filtration plant for that city, the capacity of which would be about 30,000,000 gal. daily. Plans for the plant are understood to have already been prepared.

It is understood that the directors of the Pennsylvania Railroad have appropriated \$100,000 for improvements and extensions to the company's shops at Renova, Pa. The principal improvement will be to the boiler shop, to which an addition about 100 x 200 ft. will be built and equipped with appliances for economical and rapid handling of materials. When completed it is said this will be the best equipped locomotive boiler plant on the Pennsylvania system.

The Henry K. Fort Company, refiner and smelter, Philadelphia, was recently incorporated with a capital of \$25,000.

Henry K. Fort is president; W. H. McCallum, secretary and treasurer. The company is adding to its smelting facilities by the erection of a one-story building, 30 x 120 ft., work on which is now under way.

Connery & Co., Ltd., boilermakers, have taken out city permits for the erection of a one-story factory, 62 x 120 ft., on property recently purchased by them on Second street, north of Pike street.

The William Steel & Sons Company was recently granted a permit for the erection of a one-story boiler house for the Roxford Knitting Company, Randolph and Jefferson streets. The same company is estimating on a two-story addition, 100 x 240 ft., of fireproof construction, to the factory of the Castle Kid Company, Camden, N. J.

The Summerhill Tubing Company has leased a plant in Bridgeport, Pa., which is being altered to suit its purpose for the manufacture of seamless tubing in steel and other metals. The company has provided for its needs in the way of power and general equipment, and will remove its present plant in this city to the new location in about three months.

The Shamokin & Coal Township Light, Heat & Power Company, Shamokin, Pa., which now has a steam turbine and engine driven power station of considerable size, will make some improvements this summer and also install a new gas generating plant.

Plans have been made for gradually converting the plant of the James F. Powers Foundry Company, Elkton, Md., to electric drive throughout. The blowers for the furnaces and other apparatus are already being run by motors supplied with current from a neighboring factory.

A steam turbine of 500 kw., designed to operate condensing, will be installed in the power house of the Chambersburg, Greencastle & Waynesboro Street Railway at Waynesboro, Pa., together with a three-phase 60-cycle generator coupled on the same basis and delivering alternating current at 2300 volts. A De Laval turbine set and several engine driven units are at present used. The new condensing system will include a motor driven centrifugal pump for circulating water.

J. Sewell Thomas, City Register, City Hall, Baltimore, Md., will receive bids for furnishing and erecting the electrical and mechanical equipment for the sewage disposal works at Back River, Baltimore County, Md. The equipment required includes the following: Two 150-hp. hydraulic turbines, with governors, complete; two 110-kva. alternating current generators and exciters, complete; one 50-hp. alternating current motor; four 35-hp. alternating current motors; one 5-hp. alternating current motor; one two-stage centrifugal pump; four 10-in. single stage centrifugal pumps; one 5-kw. motor generator; one 75-hp. oil engine. A traveling crane and miscellaneous supplies will also be purchased.

## New England.

BOSTON, MASS., April 26, 1910.

The demand for machine tools continues dull. Dealers are disappointed that the usual spring revival is delayed, and begin to fear that the market has been seriously affected by some influence, most of them holding that the general political situation, coupled with the prosecution of the great corporations, is to blame. The machinery builders are similarly affected, though, as heretofore, the automobile trade stands in the breach for many of them, so that their books show no diminution of orders. Woodworking machinery is in slightly less demand. The steel trade in Boston is dull, when it should be reviving under the influence of the early spring. The foundries are moderately busy and are not buying any great amount of materials or supplies.

The Boston & Maine Railroad has inquiries out for machinery for its new shops at Somerville, Mass., including cranes and some of the more special machinery which enters into railroad shop equipment, but the list for the larger amount of equipment is still to be issued. This road announces that a new roundhouse and repair shop will be built at Woodsville, N. H.

The Norton Company, Worcester, Mass., will build an addition to its works at Greendale, consisting of a brick and steel building, 90 x 104 ft., three stories. The company has begun the development of a line of carborundum products at its plant at Worcester, as well as at the new works in Canada and in Germany.

The Boston & Maine Railroad is considering the project of electrification of the Hoosac Tunnel, with a view to using electric locomotives for hauling all trains through this four-mile section of the Fitchburg division. The idea carries with it the establishment of a large steam plant for the generating of electric power.

The New York, New Haven & Hartford Railroad is petitioning the Massachusetts Legislature for the right to build additional electric lines in the Berkshire Hills, at a cost of \$2,000,000.

The city government of South Norwalk, Conn., has ap-

propriated \$30,000 for an addition to the municipal electric lighting station.

The Hamilton Woolen Company, Southbridge, Mass., will build a new power plant, 60 x 70 ft., two stories, with 175 ft. chimney.

The construction of a new electric railroad to connect Portland and Lewiston, Me., has been begun by W. Scott Libbey and Harry M. Dingley, Lewiston. The line will be 35 miles long and will pass through Auburn, Gloucester, Cumberland, Gray, West Falmouth and Deering. The estimated cost is \$800,000.

It is of interest to New England that the New England Enameling Company, Middletown, Conn., which operates large works for the manufacture of enameled ware, is one of the concerns which has been merged under the ownership of a holding company, the United Enameling & Specialty Company, a Delaware corporation, with capital stock of \$400,000.

The Greist Mfg. Company, New Haven, Conn., manufacturer of sewing machine attachments, will erect an addition which will be devoted to hardening and tempering, concentrating the departments, a step made necessary by the fumes and smoke of oil and cyanide. The general equipment will be moved from other buildings, and probably the company will require no new machinery or tools at this time.

The E. L. Le Baron Foundry Company, Bridgewater, Mass., manufacturer of iron castings, states that it will erect a new foundry immediately to replace that destroyed by fire several days ago, but the location is not determined.

The Becker Milling Machine Company, Hyde Park, Mass., manufacturer of plain, universal and vertical spindle milling machines, states that nothing definite has been decided in regard to its new buildings, but that the company expects to add to its works this season.

Additions to general manufacturing plants include the following: Arlington Mills, Lawrence, Mass., five-story picker house and storehouse, to cost \$150,000; Nyanzi Mills, Woonsocket, R. I., mill, 132 x 361 ft., four stories, and a storehouse; Hyde-ite Leather Company, Lynn, Mass., addition, 42 x 55 ft., five stories; Seekonk Lace Company, Dartington, R. I., main building, 52 x 122 ft., two stories, and another 32 x 66 ft., one story.

The Wason Mfg. Company, Springfield, Mass., car builder, plans to make important enlargements and improvements to its works this season, including a large foundry building. A tract of land has recently been acquired, adjoining the plant on the north side of Wason avenue, and the foundry will be located on the new property on the railroad. The chief purpose of the improvements is to meet the increasing demand for steel cars and trucks. An old building on the opposite side of the avenue will be sold, which will concentrate the works, affording the opportunity for more economical operation. The general scheme of improvements comprises the enlargement of all departments and a complete system of steam heating.

The New American Granite Saw Company has been organized at Worcester, Mass., to manufacture the Chase patent granite saw. George D. Webb of the Webb Granite & Construction Company, is the head of the new company, and the directors include Fred H. Daniels, general engineer of the American Steel & Wire Company. The granite saw is a ponderous machine, with frame of structural steel and a series of steel blades, each carried in a head, pivoted on a heavy shaft, and given a rotary motion, which works the granite easily. The company will have the machines built under contract by outside parties for the present.

The Star Pin Company, Derby, Conn., manufacturer of pins, hooks and eyes, &c., will raise its main factory a story, giving an additional floor space of 5000 sq. ft.

The Winchester Repeating Arms Company, New Haven, Conn., will erect a new office building 48 x 50 ft., three stories, and will raise two factory buildings, each about 50 x 360 ft., an additional story. The company states that at the present time it does not plan to buy new machine tools or other machinery for these buildings.

The Hindley Mfg. Company, Valley Falls, R. I., manufacturer of spring cotters, flat riveted keys and wire shapes, is building an addition to its factory 48 x 48 ft., one story. The business is a young one, but has grown with much rapidity, making this additional space necessary.

The plant of the Le Baron Iron Foundry was destroyed and that of the Perkins Foundry was damaged to the extent of \$25,000 in a fire at Bridgewater, Mass., April 22.

The works of the Manville Covering Company, Providence, R. I., were damaged by fire to the extent of \$20,000 April 20.

The Hobbs Mfg. Company, Worcester, Mass., has made arrangements with the American Stamp & Ticket Vending Machine Company by which the manufacturing end of the business will be located at Worcester, in a new building of the Hobbs Company, which is practically completed. The factory, constituting an addition to one of the present buildings, is 50 x 75 ft., three stories. The American Stamp & Ticket Vending Machine Company controls the American rights for the manufacture of machines under a number of patents, the devices providing for the sale by automatic machine of such articles as stamps, tickets, cards and packages.

The United Shoe Machinery Company, Beverly, Mass., states that plans not only for their erection but the equipment of the large addition to its factory are practically complete. The building will be 200 ft. long, four stories.

## Cincinnati.

CINCINNATI, OHIO, April 26, 1910.

Dealers in tools report a good, steady run of orders during the month and say that it will close a small percentage better than it opened; the heavier and more expensive labor saving types are having the call, and manufacturers of heavy punching and shearing machinery are receiving hurry orders from steel mills for deliveries on machines ordered since the first of the year. Manufacturers of milling machines are still booked ahead from three to six months on popular sizes, and heavy planers are still the most ready sellers.

Local commercial and manufacturing organizations are in receipt of invitations announcing the formal opening and inspection of the new Oakley plant of the Triumph Electric and the Triumph Ice Machine Companies for Saturday afternoon, April 30. Organizations whose members will turn out in force and who will lead in the exercises of the day are the Business Mens' Club, Chamber of Commerce, Manufacturers' Club, Industrial Bureau and Cincinnati Metal Trades Association.

Dealers are having a good run of inquiries for power and conveying machinery and metal working tools and machinery. A small advance is noted in the prices of lathes and drill presses.

The machinery section of the Cincinnati Iron & Steel Company report inquiries promising with orders keeping up in good form. Recent sales of this company were of two three-motor, 10-ton, 54-ft. span and one, four-motor, 20-ton, 54-ft. span cranes to the Laidlaw Dunn Gordon branch of the International Steam Pump Company, also a large punch and shear to Kaps & Brehm, contractors, Cincinnati. This company also sold a good sized bill of woodworking machinery to the Hastings Automatic Shock Loading Company, Hastings, Neb.

The Long & Alstatter Company, Hamilton, Ohio, reports business excellent, with an accumulation of orders for the heavy steel construction machines used by the steel mills for making tie plates, splice bars, &c. These orders, coming as they do from so many of the steel finishing mills and bridge construction plants, with requests for immediate shipment, clearly foreshadow increasing activities among the railroads which have been holding back for some time.

The forces of the Niles Tool Works Company at Hamilton, Ohio, are engaged full time and to about 90 per cent. of the 1906-7 working capacity, and for the most part on large and heavy tools used in railroad shop work. This branch of the Niles-Bement-Pond concern has gradually taken over this character of work, and their specialties are heavy driving wheel lathes, hydrostatic presses, car wheel borers, axle lathes, boring mills from 16 ft. down, and radial drills. April will close with this concern a little better than it opened, with inquiries of good character accumulating and prospects bright.

The Hooven, Owens, Rentschler Company, Hamilton, builder of Corliss engines, is working 55½ hours per week and with about 80 per cent. capacity, and report prospects bright. The heavy types of engines with improvements are in best demand.

Large manufacturing cities in this vicinity are in receipt of a letter from a California engine and pump company offering to establish in the East a subsidiary factory if sufficient inducements are offered. The California factory at present employs about 200 skilled mechanics and utilizes pattern and machine shops, iron, brass and steel foundries, &c., constituting an equipment representing an outlay of \$300,000, which would be duplicated in the new location.

The F. Grote Mfg. Company, Evansville, Ind., is considering plans for the enlargement of its elevator, boiler and water works and tobacco manufacturing machinery plant in that city. It is expected that the capacity of the concern will be doubled in the new plant, plans for which are under consideration.

Cincinnati capitalists have incorporated the Taft Gin Compress Company, to manufacture a patented cotton gin, with brokers W. R. Todd & Co. in charge of the preliminaries. James I. Stephenson has been elected president; A. D. Blanton, vice-president, and Herman Holthaus, treasurer and secretary. The capital is \$150,000.

J. Robertson, owner of the business which has been conducted in East Fourth street, Cincinnati, for several years under the name of the Robertson Mfg. Company, and as a corporation has asked for and received papers dissolving the corporation. The capital was \$15,000, all owned by Mr. Robertson, who will continue and enlarge the same

under his own private direction. He will continue the manufacture of pneumatic cleaners.

The Circuit Court at Cincinnati has approved the sale of the P. P. Mast Company, at Springfield, Ohio, to the American Seeding Machine Company, at its bid of \$35,000. The remaining assets brought \$170,000.

The Cincinnati Traction Company has made plans that will involve the expenditure this year of \$1,500,000 on new barns, replacements, power house and equipment.

The three-story building at 610-616 Haymiller street, a part of the old quarter of the Triumph Electric Company, which has just removed to its new home in Oakley, has been leased through the Western Machine Company to Frank Shobrook, a pattern manufacturer and the Reno-Kaether Electrical Company.

Otto M. Knoblock of South Bend, Ind., Harry T. Wilson of Middletown, Ohio, H. F. Smith of Lexington, Ohio, and President M. A. Loeb and Secretary Albert Strittmatter of Cincinnati, constituting the executive committee of the National Gas and Gasoline Engine Trade's Association, met at the Hotel Sinton, Cincinnati, and completed plans for the annual convention in June in Cincinnati. A splendid display of engines and accessories will be a feature of the Cincinnati gathering.

## Cleveland.

CLEVELAND, OHIO, April 26, 1910.

Business with the local machinery houses has been very quiet during the week. Few orders have come out and no inquiries of any size are pending. There seems to have been a gradual falling off in the demand during the past two or three weeks, and with several of the dealers April sales will be less than for any of the previous months of the year. General business conditions with manufacturers in metal working lines continue satisfactory and machinery men are at a loss to account for the slackening in the demand. Builders of machine tools report a fair volume of orders, but their business is coming almost wholly from the automobile trade and allied industries. The inquiry from the railroads is very light.

There is a good call for electrical equipment, the business coming from industrial plants that are replacing their old machinery or providing for extensions. Very few inquiries are coming from larger traction companies, but an improvement in business from this source is expected during the year. Second-hand tools continue fairly active, small machine shops and new light manufacturing plants furnishing the customers for used equipment.

The Cleveland office of the Allis-Chalmers Company has secured a contract from the American Steel & Wire Company for two 44 x 60 in. twin tandem gas engines, driving 60 x 80 in. blowing cylinders for installation at the Central furnaces, Cleveland, and an order from the Toledo Railways & Light Company, Toledo, Ohio, for a 4250-kw. steam turbine unit for an enlargement of its present power plant. The Allis-Chalmers Company has also taken an order from the Coshocton Light & Heating Company, Coshocton, Ohio, for a 1600-hp. turbine direct connected to a 1000-kw. generator.

A new sheet mill will be established in Canton, Ohio, if funds are provided for accepting a proposal made in behalf of himself and associates by E. E. Craumer of Pittsburgh. A 26-acre site has been selected and if the city will pay \$10,000 of the \$40,000 purchase price Mr. Craumer agrees to build and operate a \$250,000 plant for the manufacture of sheet steel, together with galvanizing, finishing and rolling departments. Immediate erection of the plant is promised in case the proposition is accepted.

New Concord, Muskingum County, Ohio, will build a municipal lighting plant. Plans are now being prepared and bids will be asked for next month.

The Blynt Mfg. Company, Ashland, Ohio, has been organized with the following officers: H. S. Blynt, president; Jacob Brubaker, vice-president; John Grabill, secretary; E. S. Arnold, treasurer. The company's charter authorizes it to manufacture lubricators, pumps, compression cups, oil pumps, plumbers' and hardware supplies and engineers' specialties.

The Victor Suction Cleaner Company has established a plant in the Richardson Building, High avenue, Cleveland, for the manufacture of a new suction cleaner. Henry Prell is manager of the company.

The Hill-Canton Dryer Company, Canton, Ohio, is a new concern that has been organized to take over the clothes dryer department of the Canton Art Metal Company. The new company is fitting up a plant at 920 South Market street. J. S. Shanks is secretary and treasurer.

The National-Acme Mfg. Company, Cleveland, Ohio, has opened an office in Detroit, Mich., at 1222 Majestic Building, with E. G. Matter in charge, who will look after the company's sales in eastern Michigan and northwestern Ohio.

The Baltimore & Ohio Railroad has let contracts for the

erection of a power plant in Lorain, Ohio, to operate the ore unloaders, for which contracts were recently placed. The plant will be equipped with two 1000-hp. Buckeye engines and two 500-kw. Westinghouse generators.

The Mercantile Supply Company is the name of a new company that has started up a plant in the Richardson Building, High avenue, Cleveland, for the manufacture of an electric suction cleaner. The company will purchase some additional equipment, including a multiple spindle drill and grinding machinery. Thomas H. Bell is president.

The J. H. McLain Company, Canton, Ohio, has purchased the plant and business of the Sodemann Heat & Power Company, Edwardsville, Mo., a suburb of St. Louis. The Sodemann plant will hereafter be operated under the name of the McLain Company. A full line of radiators will be made at that plant, duplicates of which will be manufactured at the Canton plant.

The plant of the Christy Knife Company, Fremont, Ohio, was completely destroyed by fire April 22.

The Shelby Spring Hinge Company, Shelby, Ohio, has broken ground for an addition to its factory which will be 50 x 125 ft., two stories. In this new building will be its plating, polishing and lacquering department. Some new equipment will be required.

## Pittsburgh.

PITTSBURGH, PA., April 26, 1910.

The increase in orders for heavy machinery, and especially large power units, continues to form the most prominent feature of the market, more business of this character having been closed by leading manufacturers of the Pittsburgh district or local representatives of outside concerns, within the past fortnight, than for a considerable time previous. Small orders, on the other hand, appear to have fallen off in volume, although inquiries have been liberal.

Concerns doing plate or tank work of any kind, including boiler makers and manufacturers of related lines, are rushed with orders, the demand from industrial plants predominating. Heating and ventilating apparatus for new office buildings, hotels, stores and light manufacturing establishments is also needed in all parts of the North, as well as to an increasing extent south of the Ohio River.

During the summer and early fall there will be additional coke ovens erected at various points convenient to the mines, and the present tendency seems to be to adhere to the beehive type, rather than to provide for by-products, as the market for the latter in late years has not been sufficient to encourage much more than the present output.

The report that the Northern Ohio Traction & Light Company would erect a new power station, which was prematurely circulated, has now been authenticated. It will have a capacity of 6000 kw. or upward, and probably be equipped with turbine units. The company now operates plants at Akron, Canton, Bedford, Cuyahoga Falls and Midvale, which the new central station will replace.

A new shop for use in the manufacture of motor cars is being erected at Millersville, Ohio, by the Millersville Machine Company, which will install a line of modern equipment for the purpose.

The city of Pittsburgh will invite bids shortly for three high duty pumping engines, vertical compound or triple expansion, of 45,000,000 to 50,000,000 gal. aggregate capacity.

The Superior Coal & Coke Company, Cheswick, Pa., is expected to follow the lead of the Allegheny Coal Company in building new coke ovens at that point, and considerable equipment will be required during the year. Definite plans, however, have not yet been announced.

It is stated that among the requirements of the Johnstown Passenger Railway Company, Johnstown, Pa., which is planning extensive improvements, will be a new battery of boilers. Heine and Franklin boilers are now installed.

The Ball Engine Company, Erie, Pa., is installing a twin vertical engine of 375 hp. in the mill of the Enterprise Lumber Company, Kila, Mont., whose equipment is among the most modern of any in the country.

A municipal lighting plant is to be built this year at Thurmont, Md., and manufacturers of electrical machinery located in this district will submit bids.

The Southern Cambria Railway Company, Johnstown, Pa., will purchase a Corliss engine and direct current generator of 1000 kw. delivering current at 1200 volts, which is the potential used on the line.

Improvement of the pumping plant and water distribution system, including purchase of some new equipment, will be undertaken this year at Kenton, Ohio.

Construction of a large filtration plant modeled along the lines of that now in service at Pittsburgh, with modern high duty pumping machinery, is under consideration at Charleston, W. Va., where the preparation of plans has been in progress.

An electric power and lighting plant for municipal service is to be installed this year at New Concord, Ohio.

Tate, Jones & Co., Inc., Pittsburgh, have secured an

order from the Keystone Steel Foundry Company, Avonmore, Pa., for fuel oil burning equipment for its open hearth furnaces. They have also received another order for a similar equipment for the Midvale Steel Company, Philadelphia, which makes the fifth equipment of this kind which it has purchased.

The Valley Foundry Company, Canal Dover, Ohio, will shortly increase its capital stock and will make improvements in and additions to its plant, expecting to increase its output considerably. It will install new molding machines.

The Connellsville Iron Works Company, Connellsville, Pa., has received a contract from the Pittsburgh & Westmoreland Coal Company, Pittsburgh, for another electrically operated coke pusher and leveler, being a duplicate of one furnished early this year for the company's Acme plant. One 5, one 15 and two 35 hp. Westinghouse motors will complete these outfits.

The Canton Drop Forging & Mfg. Company, Canton, Ohio, mention of whose plant additions was made in these columns recently, will move its present shop equipment into the new building, and does not anticipate needing any additional machinery during the balance of the year.

## Milwaukee.

MILWAUKEE, WIS., April 25, 1910.

During the past week there has been a sudden upward trend in the market here, due to the fact that some of the leading machinery houses have closed an unusually large number of important contracts, many of which have been pending for some time in various parts of the country. To a considerable extent these are for the account of mines, mills, furnaces and smelters, or industries directly connected with the recovery and utilization of metals. The buying at present, however, is of too heavy a character to promise any continuity and the general opinion seems to be that the market is about to settle down to a period of comparative dullness, broken by occasional up-turns of the character indicated.

With only moderate buying, however, work now in the shops will be in most cases sufficient to tide Wisconsin manufacturers over until fall. A favorable feature of the situation is the fact that practically all of the orders taken lately have been on the basis of a fair profit and with minimum sales expense. In the total volume of bookings the smaller orders predominate both in number and value, despite the fact that several local concerns are now working on contracts of unusually large size.

Another feature of the current situation which gives steadiness to conditions here lies in the growing tendency of large users of machinery to standardize their minor equipment and make season contracts both for new apparatus and spare parts. This is particularly true with reference to public service corporations furnishing power, lighting, heating and traction service, whose requirements now constitute one of the strongest sustaining influences of the market. Under present conditions the demand from this source is very dependable and it enables manufacturers to plan with greater certainty for the future than in the case of most other lines.

Some concerns have experienced a great deal of difficulty this season in obtaining forgings as needed, and the quality of those furnished has in many instances been unsatisfactory. This is leading to the establishment of modern forging plants in connection with quite a number of machinery building shops of the West, and plans for others are now being made. In this connection considerable attention appears to be given to the subject of hydraulic presses; but thus far their advantages have not been very clearly impressed upon the minds of possible users. It would seem as though there were a good field in this section for missionary work on the part of manufacturers of machines of that kind.

The sand-lime brick industry is opening up opportunities for the sale of crushing, grinding, mixing and pressure machinery, together with auxiliary equipment of considerable variety, which builders of such apparatus seem to be slow to take advantage of. A good many plants of that nature are, however, contemplated in various parts of the country, and Wisconsin capital has been interested in them both here and elsewhere. The machinery used has, in general, been adopted from the cement making and timber preserving industries and can readily be supplied by firms that cater to those lines. Another similar line of work worth following up is in connection with the nodulizing of fine material for treatment which involves combustion. The mechanism used for this purpose centers about a steel frame rotary kiln such as has recently been introduced into lime burning, and it has proved very successful in various processes.

In machine tools and other equipment for shops or foundries, the market continues rather quiet, and practically all of the buying is in small lots. Prices, however, are well

maintained and, due to the excellent manufacturing conditions now prevailing, the margin of profit is better than it has been. Second hand machinery moves rather slowly; but a fairly steady demand exists for the best character of tools of this class, and dealers who make a specialty of it feel that they are having a very good season.

Advertisements from large machinery builders of Wisconsin are appearing in nearly all of the principal newspapers of the State, calling specifically for men capable of operating horizontal boring mills, plain, slab and portable milling machines, shapers, screw machines, shaft grinders, &c., also handymen. This illustrates something of the present need felt by most concerns of increasing the working forces in their shops. Heretofore there has not been as much difficulty here as elsewhere through the country in obtaining competent machinists, but the demand now considerably exceeds the supply.

The Giddings & Lewis Mfg. Company, Fond du Lac, Wis., has put in operation its large new plant for the production of saw mill and woodworking machinery.

The industries of West Allis, Wis., are to have another notable addition in the plant to be built there by the Kemp-Smith Mfg. Company, whose milling machines for machine shop service have a large sale abroad as well as in this country. A 10-acre tract has been secured and the buildings first to be erected will provide about 100,000 ft. of floor space, with considerably more equipment than that now in service at the old plant.

The C. B. Henschel Mfg. Company, Milwaukee, is planning to enlarge its box factory and some new equipment will probably be required by fall.

The Electric Light Company, Manitowish, Wis., which has a power plant of considerable size, will enlarge and improve its equipment during the present year.

The contract for hydraulic turbines to be installed in the new Au Train plant of the Escanaba Power Company, Escanaba, Mich., was lost to manufacturers in Wisconsin, Ohio and the East, by one of whom it was expected to be taken, and has been awarded the Pelton Water Wheel Company of San Francisco, Cal.

D. P. Davies, who recently resigned as assistant manager of the Allis-Chalmers Company's gas engine department to reenter the employ of the J. I. Case Threshing Machine Company, Racine, Wis., has been made superintendent of the manufacture of gasoline and oil engines, with which its threshers will hereafter be equipped. This marks a notable departure from the long established practice of using uneconomical steam engines and opens another large field to the internal combustion motor.

An addition 40 x 55 ft., provided with a new crane and operating equipment, will be made to the plant of the Becker Mfg. Company, Two Rivers, Wis. It will be used for foundry purposes.

Alfred Laukhuff, with offices in the Majestic Building, Milwaukee, will represent the Reeves Pulley Company, Columbus, Ind., in the sale of its power transmission specialties.

A new factory may be built at Kewaunee, Wis., by the Kankakee Specialty Company, now located in Green Bay, Wis.

The Wehr brothers have organized the Wehr Steel Company and will engage in the production of crucible steel castings. A foundry 100 x 200 ft., equipped with eight oil furnaces, will be erected on a site just acquired in West Allis, of about one city block in extent.

An electrical generating unit of 200 kw., with motors, controllers, &c., for direct machinery drive, will be installed in the plant of the Badger State Tanning Company, Sheboygan, Wis., which is arranging to discard its present system of long shafts and belting.

The Allis-Chalmers Company reports that sales of large gas engines to the companies composing the United States Steel Corporation have reached a total of 50, the last two of which apply on a contract just awarded by the American Steel & Wire Company for two blowing units to be installed at its Central Furnaces in Cleveland, Ohio. The engines for these have a maximum capacity of 5000 hp. each and are of the twin-tandem double-acting type. They are stated to be the largest ever built in this country. This is the sixteenth consecutive order for gas engines to be placed by the Steel Corporation in the West Allis Works.

It is reported from Ashland, Wis., that the Ashland Light, Power & Street Railway Company will arrange in the near future for the purchase of two hydroelectric units having a combined capacity of 3000 hp. Chas. G. Wright, Chicago, Ill., is president of the company.

The Madison Gas & Electric Company, Madison, Wis., which has a combined gas engine and steam turbine plant, will add to its generating capacity another turbine of 1500 hp., with alternating current dynamo of corresponding size. It will duplicate apparatus already in operation.

The Koehring Machine Company, Milwaukee, has appointed John A. Donahue, Great Northern Building, Chicago, as selling agent there for its line of products.

John Jennings & Co., New London, Wis., will build a shingle mill. Power and operating equipment is to be provided.

The plant at Heinemann, Wis., of the Heinemann Lum-

ber Company, Merrill, Wis., which recently burned, will be rebuilt, necessitating the purchase of some new machinery.

According to reports from Superior, Wis., a large contract for ore and coal handling machinery, including power units, motors, controllers and pneumatic devices, will be let shortly for an immense dock to be constructed there by the Minneapolis, St. Paul & Sault Ste. Marie Railway. Definite information can probably be obtained from the company's chief engineer, Thos. Greene, Minneapolis.

The Page & Lyon Mfg. Company, New London, Wis., is reported to be in the market for a new engine, boiler and other machinery, necessitated by an addition to the plant.

The work of the Board of Public Works, Milwaukee, has just been concentrated in the hands of a single commissioner, H. E. Briggs, who is the first technical man to be appointed to that position for a good many years. Mr. Briggs was formerly engaged in steam turbine designing for the Allis-Chalmers Company, which he left to go with the Westinghouse Machine Company, Pittsburgh, returning later to become an instructor in the local trade school. He is regarded as an expert mechanical engineer.

A press item from Chippewa Falls, Wis., states that the Northwestern Furniture Company will install a resawing plant, with power equipment.

The plant of the Mineral Point Zinc Company, Mineral Point, Wis., will be greatly enlarged. A new crushing outfit, storage bins served by electrically operated handling crane and additional furnaces, condensers, &c., will be erected.

The Modern Motor Company, Milwaukee, has established a well equipped machine shop in connection with its garage.

If permission to bridge a street at one side of its present plant can be obtained from the city, the Wisconsin Chair Company, Port Washington, Wis., will erect a large factory opposite. Plans covering equipment, which will probably include electric drive, have not been definitely made.

The Reliance Engineering & Equipment Company has been organized here, with offices at 330 Clinton street, and will enter upon the sale of both new and used machinery in addition to drawing plans for industrial plants, power stations, &c. A branch will also be opened in San Francisco, Cal.

The Briggs & Stratton Company, Milwaukee, have completed a new factory and installed machinery for the manufacture of igniters used with gas and gasoline engines, including automobile motors.

It is announced that the Falk Company has acquired rights for the United States and Mexico to patents covering double helical gears and gear cutting machinery invented by C. Wüst, Seebach, Zurich, Switzerland. This company's department for the manufacture of gears, both cut and cast, up to the largest sizes, now constitutes one of the most important parts of its plant. It has, among other tools, very efficient gear cutters of its own design.

Batteries in different sizes for general power service, including ignition of automobile and motor boat engines, are being made in Milwaukee by the Northwestern Storage Battery Company.

Work on the erection of a foundry has been started by the Garage Equipment Company, Milwaukee, and a new manufacturing plant 150 ft. square, four stories, will be erected.

Another noteworthy instance of the invasion of this territory by Pacific Coast manufacturers is to be found at Fond du Lac, Wis., where the Byron Jackson Machine Works, San Francisco, is installing a steam-driven pump for the Fond du Lac Water Company.

The Eagle Mfg. Company, Appleton, Wis., has decided upon building traction engines to be used for plowing. Each will embody a gasoline motor.

The Milwaukee Machine Tool Company, Milwaukee, Wis., will commence in the near future the erection of a new and larger plant in that city. Details are not ready for publication.

The Miller Saw-Trimmed Company, Milwaukee, Wis., having outgrown its quarters in that city, will remove to Alma, Mich., where it has secured a factory which will be equipped with modern machinery. The company has been reorganized under the laws of Michigan and has elected the following officers: Francis King, president; F. H. Petrie, vice-president; Harry G. Miller, secretary and treasurer. The company expects to move into its new factory about September 1.

## Detroit.

DETROIT, MICH., April 26, 1910.

Business during the past week has been rather quiet, so far as bookings are concerned, and the prospect is that most manufacturers, including tool builders, will be content to take orders as they come, for the next month or two, without making any special effort to obtain new business. There seems to be a very general inclination to accept a breathing spell, preparatory to increased production in future; and many plans for shop improvements, extensions,

&c., are being carefully gone over, with a view to execution in the late summer or fall. In many cases, also, there is urgent need of revision of catalogues, price lists and advertising work, for which it is always hard to find time. This has been sadly neglected by most houses since early last autumn, and the lack of suitable matter explaining the construction, advantages, &c., of machinery, as at present designed, results in much unnecessary correspondence.

Production in the shops goes steadily on, and there is no indication of any general let-up during the summer season. In fact, the tendency is toward a largely increased output, by reason of the added facilities which will be put in service.

Foundries are being pushed as never before in their history, and many local establishments, such as the automobile factories, which would gladly order castings here, are compelled to go far afield for necessary parts. Brass and aluminum foundries, in particular, are tied up with season contracts to such an extent as to eliminate the majority of them from present consideration in arranging for new work.

Manufacturers of specialties of various kinds, the enumeration of which would be almost endless, are turning more largely this year, than at any former period, to the Southwest, where a good many agencies, as well as branch factories, have recently been established. Strange to say, it was the automobile that led the way for this wholesale invasion of new territory. Motor car dealers of that entire section are almost invariably interested in other lines of merchandising, and, on their visits to Michigan, Ohio or Indiana cities, where automobiles are produced, they have taken occasion to visit neighboring factories, with the consequent cementing of trade relations. Detroit, especially, has been the gainer in this movement, owing to the community of spirit manifested here.

The construction of an electric plant at Muskegon, Mich., to be operated by the city, has been definitely determined upon, and the funds for the purpose will be provided shortly.

Plans for an additional factory structure have been prepared in behalf of the Macey Company, Grand Rapids, Mich. It will be about 100 x 125 ft., equipped with motors, blowers, heating apparatus, sprinkler system and special machinery.

From La Fayette, Ind., it is reported that the Commercial Club of that city has been assured by the American Motor Car Company, Indianapolis, Ind., that it will erect a factory there for the manufacture of automobiles.

It is probable that a modern high duty pumping engine, compound or triple expansion, will be required within the year at Holland, Mich., where extensive improvement of the water works system is being planned.

Advices from Waynetown, Ind., are to the effect that the Waynetown Electric Light Company, recently organized, will build an electric power station, equipment for which will shortly be provided.

As first steps in the general electrical operation of its properties, the Quincy Mining Company, Hancock, Mich., will install an exhaust steam turbine driving a General Electric generator of 300 kw., contract for the unit having already been placed. Eventually a large line of motors will be required both in the underground workings and in the rock-house, mill and handling plants at the surface.

A five-story addition 30 x 40 ft., with new equipment, also a warehouse building, will be erected by the Bissell Carpet Sweeper Company, Grand Rapids, Mich.

Plans for the new shops to be built by the Detroit Shear Company, Detroit, are sufficiently complete to enable some of the equipment to be figured on.

The Manistee Iron Works, Manistee, Mich., is meeting with considerable success this season in the sale of its improved type of grinding hog, which is built in sizes up to 72-in. opening. The heavy rotor, with all steel knives, and open throat arrangement, gives it a steadiness of operation which enables electric motors to be used for driving the machine, and that combination is now frequent.

The Guarantee Machinery Company, Grand Rapids, Mich., recently incorporated to manufacture wood working machinery, advises that it has its plant equipped and will soon be in running order.

The Union Screen Company, Albion, Mich., manufacturer of screens, steel and wire specialties, has plans in progress for the erection of an addition to its factory 60 x 175 ft.

The Murphy Chair Company, Detroit, Mich., has awarded a contract for the erection of a foundry 50 x 104 ft.

The Michigan Paper Company, Plainwell, Mich., is having plans prepared by Daniel J. Albertson, Kalamazoo, Mich., for the erection of a two and three story paper mill factory to cost \$300,000.

The State of Michigan is having plans prepared by E. W. Arnold, Battle Creek, Mich., for a heating plant to cost \$12,000 to be installed at the State Normal School at Ypsilanti.

The Saginaw Sheet Metal Works, Saginaw, Mich., will erect a new plant covering about 2 acres.

The Gier & Dail Mfg. Company, Lansing, Mich., has purchased a four-story brick building which is being remodeled. The company will make a specialty of steel stamping work,

and will also manufacture automobile and gas engine parts. The new building will have a floor space of 40,000 sq. ft.

The Wolverine Brass Works, manufacturer of plumbing specialties, Grand Rapids, Mich., will probably need one or two automatic screw machines and buffing machines for additions now under way. This equipment will be built to order.

The Duke-American Steam Turbine Company, Grand Rapids, Mich., has changed its name to the R. G. Peters Mfg. Company. The change in name does not indicate a change in ownership, management or responsibility. The officers and directors remain the same and business will be conducted as heretofore.

## The Central West.

DES MOINES, IOWA, April 23, 1910.

Through Iowa, Nebraska and the States farther West inquiries seem to have fallen off considerably during the past week or ten days, due to the rush of business at the opening of spring; but this has no other effect than to relieve the pressure on manufacturers and dealers, who will be very fully occupied, for some time to come, with orders taken in March and the first part of April.

One line for which the demand continues strong, with increasing tendency, is that of gasoline and oil engines. From present indications the current year will witness a decided shortage of some standard makes; but new machines are being constantly introduced, and all apparently render satisfactory service. The action of manufacturers of power operated agricultural machinery in substituting gasoline for steam has made the internal combustion motor familiar to many people in the West who formerly regarded it with suspicion; and the result has been to give a decided impetus to the trade, besides what it has developed in other directions.

The use of electric motors is also gaining strength rapidly in all communities where public service plants are operated; as the central stations, generally, have entered upon systematic campaigns for securing commercial day load. This is most noticeable in the smaller towns, where there has not been the effort to unduly maintain rates that characterize the electric power companies of most of the large centers of population. Manufacturers of small motors will, therefore, find their best field of sale outside of the principal cities, except where the equipment of important industrial plants is concerned.

The plant of the Alliance Electric Company, Alliance, Neb., which is equipped with a generator of the National Electric Company's manufacture, driven by a Murray Corliss engine, will be purchased by the city and enlarged. The pumping capacity of the water works is also to be increased.

Detailed plans for the municipal power and pumping station to be erected at Fairbury, Neb., have been prepared, and purchases of equipment will be made as soon as the necessary funds are provided.

The growing importance of Omaha as a center for structural steel fabricating and erection is shown in the large number of contracts recently reported as having been taken by the Standard Bridge Company and the Western Bridge & Construction Company of that place. The latter has lately made arrangements with a number of counties in the State for building all of the steel bridges needed during the year and keeping others in repair.

The Denver Gas & Electric Company, Denver, Colo., whose plans for increased generating capacity were mentioned some time ago, has placed an order with the Heine Safety Boiler Company, St. Louis, Mo., for a new battery of 1400 hp. boilers.

A report from Lewiston, Idaho, which seems to be reliable, but is given here without authentication, states that plans are being perfected for the organization of the Craig Light & Power Company, of Vollmer (Troy, P. O.), with a capital stock of \$50,000. The company has acquired a power site on Lawyer's Canyon Creek, above the railroad bridge, and by moderate development will be able to generate 500 hp. Among the list is a large machine shop that will be complete in every detail and will be equipped to handle all kinds of farm and milling machinery. Those interested are W. J. Ramey, W. L. Lyons, J. Tyler and J. B. Davis, all of Vollmer.

French & Hecht, Davenport, Iowa, have completed preparations for the construction of a new foundry to be used in the manufacture of wheels. The equipment of the building has been mainly provided for.

From Seward, Neb., it is reported that the plans of Boyes, Hulshizer & Co. of that place for a hydroelectric plant on the Blue River will take definite form this summer. The city of Seward is served by a municipal plant of 250 kw. capacity, which does not, however, provide for commercial day load such as the new enterprise contemplates.

The Colorado Light & Power Company, Canon City, Colo., which has in operation a Westinghouse steam turbine unit of 1500 kw. capacity, besides engine-driven generators of somewhat larger aggregate capacity, will double its turbine equipment shortly. This is an entirely different company

from the Colorado Railway, Light & Power Company mentioned in last week's report as having bought a 4000 kw. turbine.

The Cement Tile Machinery Company, Waterloo, Iowa, has introduced its new patent Schenk tile machine so extensively this season in all parts of the United States that an enlargement of its manufacturing facilities will be necessitated shortly. The branch factory maintained at Chatham, Ont., Canada, is equally busy.

Bonds for the construction of a large hydroelectric power and pumping station, with complete system of water works, have been voted at Idaho Falls, Idaho.

A gas generating plant, with large steel holder and accessory machinery, will be erected this summer at Decorah, Iowa, where the municipal authorities are now having plans prepared.

Construction will be started early in May of a pumping plant and water works system for the city of Corydon, Iowa. A municipal power station for electric lighting, in which a Fort Wayne dynamo of 75 kw. is driven by a Murray engine, is already in service. The capacity of this may be enlarged also.

Bids covering apparatus needed in the building of water works at Meridian, Idaho, will soon be called for, as bonds for the purpose have been sold.

### The Northwest.

ST. PAUL, MINN., April 25, 1910.

Machinery houses of the Twin Cities and representatives of outside concerns have found trade only fair of late, although the aggregate of small orders is quite heavy. A number of large contracts are in prospect for power and electrical machinery, and there is considerable business for the account of new factories which will be rather widely distributed; but during the coming fortnight, at least, the ordinary run of trade is likely to be quiet.

With the exception of contracts let by municipalities and public service corporations, buying of machinery for use in operations at the head of the lakes and on the iron ranges continues to be the most prominent feature of the market. The extent of this has surprised almost everyone. Probably it will dwindle before long to no more than moderate proportions, but there are not wanting those who predict even greater activity by fall.

Under the stimulus of construction work recently begun on the plant of the Minnesota Steel Company, the cities of Duluth and Superior, through their commercial organizations, have inaugurated a systematic campaign for new industries. Thus far this does not appear, on the surface, to have met with any great degree of success, but a good many concerns have been sufficiently interested to make investigations, and some of these are expected to avail themselves of the sites offered for factories. One of the inducements held out to manufacturers is hydroelectric power at low cost. Over 40,000 hp. is now available and this capacity can be doubled or trebled on short notice, as the Great Northern Power Company has very comprehensive plans for future service. At the steel mills gas power will be used, on the same plan as that adopted in Gary, Ind., and there may be a surplus of this, also, for diversion to subsidiary plants, including the proposed cement mills to utilize the slag.

The Wm. B. Hough Company, which handles cold twisted steel for concrete reinforcement, has opened an office in the Lumber Exchange Building, Minneapolis, with J. E. McAfee in charge.

The Great Northern Railway Company has let contracts for a pattern shop, foundry, boiler shop, machine shop and other buildings to be used in repair work at Brainerd, Minn.

New operating machinery is being installed by the Austin Cement, Stone & Tile Company, Austin, Minn., and more will probably be required later on, as provision has been made for a large season's output.

A new company known as the Joerns-Thiem Motor Car Company, in which members of the Joerns Bros. Mfg. Company, St. Paul, are said to be interested, has purchased a factory building in St. Anthony Park, a suburb of the city, and will equip it for the manufacture of both automobiles and motor trucks.

The municipal electric light plant at Pelican, Minn., which contains an engine of 125 hp. built by A. L. Ide & Sons, Springfield, Ill., driving a direct current generator, needs to be enlarged, and money for the purchase of additional machinery will probably be available in May or June.

One or more pumps of moderate capacity, steam or gasoline engine driven, are likely to be required shortly at Lebeau, S. D., where a water supply system is projected.

The Security Bridge Company, Minneapolis, has been awarded a contract by the city for three new steel bridges.

A foundry is being remodeled and improved for the use of the American Ornamental Iron & Bronze Company, Minneapolis.

The plant of the Faribault Gas & Electric Company,

Faribault, Minn., whose power generating system has a present capacity of 500 kw., has been acquired by the Consumers Power Company and will be increased.

Nelson Bros., Sheridan, Wyo., have started to develop a new coal mine and will be in the market for considerable equipment during the coming year.

Two hydraulic turbines, driving alternating current generators of 1200-kw. capacity, with governors, exciter unit and auxiliary apparatus, will be installed in the new municipal plant at Cannon Falls, Minn. The principal machinery has been ordered, but more is likely to be needed before the end of the year.

A contract has been placed by officials of the Government Reclamation Service with the Atlantic Equipment Company, New York City, for two 30-ton steam shovels to be used on work in Montana.

It is reported from Caledonia, Minn., without official confirmation, that the city will install a 6-in. motor driven centrifugal pump.

At Miles City, Mont., a new electric plant will be constructed for municipal service. One of 250 kw. capacity is now in service. Pumps may also be required.

Luther S. Cushing, St. Paul, is having plans prepared for improvements to the Endicott Arcade in that city, which includes a power plant representing a cost of \$35,000.

On April 23 fire destroyed the municipal power and lighting plant at Brainerd, Minn., causing an estimated loss of \$40,000.

### The Southwest.

KANSAS CITY, Mo., April 25, 1910.

While trade in general has diminished somewhat within the past few days, along some lines it is exceptionally brisk. Elections recently held at numerous cities, towns and villages of the Southwest put the stamp of popular approval on many projects for water works, electric power and lighting plants and sewage systems, as well as the granting of franchises to public service companies; and for all of these material and equipment are needed. Bids will be taken and purchases made from about May 1, until well into the summer.

New industrial plants, fostered by Eastern investors, are also springing up in the smaller cities, as the result of substantial inducements offered by various localities. Many of these have already been referred to by *The Iron Age*, and others are mentioned below. The best way of getting in touch with them is to keep tab of the work being done by the various local boards of trade and other local commercial bodies which have new industries committees. Items appearing in this paper can be followed up to advantage through such organizations, a list of which is published by the Interstate Commerce Commission at Washington, as by so doing manufacturers will be able to deal with the parties interested in their home towns, where advance orders for machinery are frequently, if not usually, placed. This is particularly true of automobile concerns, agricultural implement makers and owners of large wood working factories.

Engines operating either on natural or producer gas continue to grow in favor, and the use of oil for fuel under boilers is also steadily increasing. For power equipment of all kinds, in fact, the needs of the Southwest this season are more than double what they were a year ago, due to the tremendous growth in industrial activity. Electrical operation, too, has made large gains, although not in the same proportion, as shafting and belting are still used here to a greater extent than in most sections.

A large steam driven pumping plant will be erected by the Prairie Oil & Gas Company, DeQueen, Ark., for forcing crude petroleum through a pipe line to Baton Rouge, La.

An unauthenticated report from Cisco, Texas, states that the initial equipment for a power and lighting plant, acquired by the Star Electric Company, will be installed at once.

An addition of about 750 kw., including the installation of two new boilers of 500 hp. each, will be made to the capacity of the Oklahoma Gas & Electric Company's plant at Oklahoma City, Okla.

A new two-story building, 60 x 140 ft. will be added to the factory of the Fort Smith Folding Bed & Table Company, Fort Smith, Ark.

The machinery building plant of the Ketcham Iron Company, Fort Smith, Ark., which was recently damaged by fire, will probably be reconstructed for considerably greater capacity, as it has a large and growing business through all parts of the Southwest.

One of the improved type of flooring machines manufactured by the Berlin Machine Works, Beloit, Wis., has been installed by the Dayton Lumber Company, Dayton, Texas, and a second unit will be provided later for the same plant, together with other equipment.

The plant of the Commonwealth Mine & Milling Com-

pany, Pearce, Ariz., which was partially destroyed by fire, will be rebuilt at once. The boiler house was saved; but new engines, generators and auxiliary power equipment, together with considerable concentrating machinery, will be required. Swatling & Smith, who have a large store in Pearce, are among the principal stockholders.

Mitchell & Mitchell, Fort Smith, Ark., will extend their plant and install additional machinery for the manufacture of metal springs.

It is reliably reported from Shawnee, Okla., that a plant for the manufacture of metal culverts, roofing, siding, tanks and corrugated iron products of various kinds will be erected there by Belt & Walters. The necessary machinery is said to have been ordered. This industry was secured through the efforts of the local Chamber of Commerce.

An item of considerable interest to machinery manufacturers and equipment houses operating in this section is the apparently reliable report from Wichita, Kan., that the Kansas Gas & Electric Company is now in control of all of the property of the Edison Light & Power Company, the United Gas Company and the Gas & Electric Appliance Company of Wichita, including the control of all of the capital stock of the Home Light, Heat & Power Company of Pittsburg, Kan. L. O. Ripley of Wichita, will act as general manager.

The Lufkin Foundry & Machine Company, Lufkin, Texas, is building a number of large tanks for lumber companies to be used in soda dipping. This seems to be opening up a very extensive line for tank work in all parts of the timber manufacturing districts.

A modern power plant, including electrical machinery, will be installed by the Southern Mills Company, Trawick, Texas, in connection with an enlargement of its manufacturing facilities there.

From Hondo, Texas, it is reported that a gas producer power unit and other apparatus will be installed for an electric plant, presumably the Hondo Light & Power Company, although A. G. Hondo is mentioned as the owner.

The Ray Consolidated Copper Company, New York City, has decided upon the use of Heine boilers, at Kelvin, Ariz. There will be 14 of these, each having a capacity of 600 hp., with ample allowance for overloading.

The Bessemer Gas Engine Company, through its branch in Joplin, Mo., has placed two power units and a two-stage gas driven air compressor with the Beth Mining Company, operating near that place.

The municipal authorities at Coldwater, Kan., have entrusted an engineering firm in Kansas City with the preparation of plans and specifications for an electric power station, pumping plant and water works system.

D. J. Turner, Boley, Okla., has organized the Boley Light & Power Company, which will be in the market for an electric generating unit and other machinery to be used in installing a public service plant. The type of prime mover required has not yet been determined upon.

The Northern Texas Traction Company, whose plans for enlarged power equipment were referred to last week, has also decided to erect car building and repair shops at Fort Worth, Texas, which will be outfitted for the complete construction and maintenance of rolling stock of all kinds used on its lines.

The project of establishing a municipal power plant and water supply system at Oakley, Kan., was carried in the recent election, and the details of construction, equipment, &c., will be considered shortly.

The National Lead Company will install in the power plant of its St. Louis works engine driven generating units of about 500 kw. to provide direct current for operating motors, lighting, &c.

The construction of water works has been authorized at Ennis, Texas, and equipment will be ordered this spring.

The Municipal Light & Water Company, Lebanon, Mo., has a power plant of about 75 kw. now in service and will more than double its capacity in the near future. Funds for the purchase of new machinery are being provided.

A battery of Freeman water tube boilers of 400 hp. will be installed by the Southwestern Cotton Oil Company, Oklahoma City, Okla.

A new pumping station is to be built this spring by the city of Waco, Texas.

The H. N. Strait Mfg. Company, Kansas City, Mo., is meeting with an excellent demand for its Monarch engines on the Pacific Coast. In Los Angeles, Cal., as the writer is reliably informed from disinterested sources, a greater number of power plants are equipped with its engines than with those of any other make.

Bids are to be taken in May on the construction and equipment of a new water works system for Krebs, Okla.

The Western Foundry & Iron Company Wichita, Kan., is considering the erection of a two story structure on its present shop site the latter part of this year which will be used as a foundry. The present foundry will be turned into a structural shop and additional iron working machines will be installed. New equipment, however, will not be purchased until early in 1911.

The Southwestern Foundry Company, Oklahoma City,

Okla., is erecting a new factory building, 100 x 300 ft., four stories, which it will equip with a new boiler and engine, dry kiln and considerable wood working machinery and a large freight elevator. The company recently increased its capital stock from \$25,000 to \$150,000.

J. C. Amsler, Hempstead, Texas, is promoting a company for the installation of an electric light plant at that place to cost \$10,000.

The Rio La Casa Company, East Las Vegas, N. M., is having plans prepared for a power plant to be constructed on the Rio La Casa River.

The Honey Grove Ice & Light Plant, Honey Grove, Texas, will install a 10 kw., 110 volt direct current generator with a 15 hp. gasoline engine.

Sealed bids will be received by the City Clerk of the city of Lincoln Center, Kan., until May 16, 1910, for the following equipment for the city water and electric light plant: One 125 hp. engine, four valve, direct connected to a 75 kw. generator and exciter; one 75 hp. horizontal high speed engine, belt connection; one water heater; one feed pump; two 125 hp. high pressure tubular boilers and parts; piping, valves and all fittings. Specifications will be furnished to all prospective bidders on application to the city clerk.

The Scandland Mfg. Company has been incorporated in Wichita, Kan., to manufacture power feed grinders. The present equipment requirements of the company have been filled. J. A. Scandland is president; J. Elmer Reese, vice-president, and B. J. Sibbett, secretary.

## The South.

NASHVILLE, TENN., April 25, 1910.

Since the last report was made, trade has assumed more of a spotted character. Some manufacturers report the successful conclusion of negotiations involving large contracts for machinery, as well as material used in construction, while others note a falling off both in orders and inquiries. With a few notable exceptions, as given below, buying for the account of isolated mills and mines, which was very lively for a time, has fallen off rather suddenly. Whether this may be taken merely as a lull or presages the usual dullness that sets in with warm weather, it is too early as yet to tell; but the probability is that purchases will be more or less sporadic from now until fall.

In the sections bordering on the Gulf, there is a surprising degree of activity, as compared with those farther north, and this relates largely to the metal working industries. Foundries and shops, both large and small, are rushed with work of every description, considerable of which is in the nature of repairs for machinery used in cotton gins, mills, factories, refineries and timber cutting plants, as well as for steamboats, railroads, contractors, &c.; and the majority of these are arranging to extend their facilities, in order to cope with expected future business.

In Tennessee a notable development of the past few months, which seems likely to continue, is the erection of hardwood and Georgia pine flooring factories by Northern capital, some of these being removals from districts where suitable wood for the purpose has become scarce. The equipment of such plants is invariably of the most modern character, and they afford opportunity for the sale of a great deal of subsidiary apparatus, like electric plants, motors, automatic controlling devices, compressors, exhaust fans, blowers, tanks, sprinklers, fire pumps, hose, &c. It is a trade well worth following up and cultivating.

The municipal power plant at Cartersville, Ga., which has a present output of 250 to 300 kw., will be arranged for the installation of at least one additional generating unit. The engine now in service, which was built by the Harrisburg Foundry & Machine Works, Harrisburg, Pa., drives a Stanley dynamo.

Construction of an incineration plant has been decided upon by the city authorities at Montgomery, Ala., and it is proposed to utilize the heat under boilers for operating an electric plant.

The Sloss-Sheffield Steel & Iron Company, Birmingham, Ala., is preparing to pump out one of the mines at Sloss, Ala., which has suffered considerably from being flooded. Two four-stage single-suction, horizontal centrifugal pumps, with capacity of 1800 gal. per minute each, against a 600 ft. head, will each be direct coupled to a 400 hp., 2200 volt, induction motor. Power for operation will be supplied by the turbo-generator set alluded to in this report last week, which is rated at 750 kw., three phase, 60 cycles, 2400 volts. The steam end of the plant will be run condensing and for electrical exciters there will be two units of 15 kw. each, one engine and the other motor driven.

It is reported from Riverside, Ala., without confirmation, that the Riverside City Development Company, recently organized there, will be in the market for power, pumping

and electrical machinery with which to equip a public service plant.

From Louisville, Ky., it is reported that the Southern Veneer Mfg. Company, of that city, will build a saw mill equipped with modern power and cutting machinery, a site for the purpose having been acquired.

A new boiler of 100 hp. and other additional equipment has been installed by the Yellow Pine Lumber Company, Franklinton, La. Further improvements will be made later on.

It is reported from Lake Charles, La., that H. M. Bradley, mentioned as a resident of that place, is preparing to build a foundry and machine shop.

The Ogeechee River Electric Power Company, Rocky Ford, Ga., which can probably be best addressed in care of D. G. Ziegler, Jacksonville, Fla., who is reported to have been active in its organization, is planning construction of a 10,000 hp. hydroelectric plant. The main offices will be located at Savannah, Ga.

The city of Ocala, Fla., which has an electric plant equipped with Westinghouse alternating current generators, will double its capacity, bringing the total up to 600 hp.

The Southern Public Service Corporation, Florence, S. C., which has been in the hands of P. A. Willcox of that city as receiver, recently disposed of its interest in the plant of the Florence Light & Power Company, about 200 hp., to a Northern company. Anyone desiring definite information as to the future of the property can probably obtain it through Mr. Willcox.

The electric system of the city of Gainesville, Ga., which is operated on current purchased from the North Georgia Electric Company, will be considerably extended before fall, and new motor driven pumps will probably be required for the water works. The company mentioned is also reported to contemplate enlargement of its hydroelectric plant on the Chattahoochee River, but as yet no authorized statement to that effect appears to have been made.

A new repair shop of considerable size, which will be equipped with the motor driven machine tools and other apparatus usual to such an establishment, is under construction by the Tidewater Power Company at Wilmington, N. C.

J. F. Boyd, who owns the electric lighting plant at Shelbyville, Tenn., has organized the Bedford Light & Power Company, for installation of a generating station at Bedford, Tenn. The units operated in Shelbyville consist of a General Electric dynamo for alternating current driven by an Atlas engine and a hydroelectric set somewhat larger.

Pumps for city water works, to be used in circulating water from artesian wells, will probably be required this coming summer at Osyka, Miss., where plans are under consideration.

C. E. Murray, who has a cooperage shop at Decherd, Tenn., will install pumps and operate a water supply system under a ten-year franchise recently granted him.

The erection of an electric plant for municipal service is under consideration at Rayville, La.

Negotiations are stated to be in progress at Rock Hill, S. C., for the purchase by the city of the electric power plant of the Rock Hill Water, Light & Power Company, which is controlled by the Southern Public Service Corporation, now in the hands of a receiver. There is an engine driven plant of 200 kw., which was one of the first of the modern type to be built in this section, and connections were also made some time ago to the lines of the Southern Power Company.

D. C. Jordan, of Jordan & Pounds, Guntersville, Ala., has formed a company to install an electric power plant. Machinery has not yet been provided.

The R. D. Cole Mfg. Company, Newman, Ga., has taken contract for the elevated steel tank of 150,000 gal. capacity to be erected for the city of Quitman, Ga. Both the machinery building and steel fabricating departments of this company have had a good run of business for some time past.

The buildings to be completed this spring for the Anniston Foundry & Machine Company, Anniston, Ala., as previously mentioned, will include a new pattern shop, storage building, foundry and machine shop. All of the machinery in the plant is to be driven by motors and the equipment will be modern in every respect.

Funds for the construction of a water works system have been provided at Mt. Jackson, Va., and the matter of equipment will be taken up shortly by the authorities there.

Hazlehurst & Anderson, Candler Building, Atlanta, Ga., have prepared plans for the municipality of Gadsden, Ala., for an extension of its water works. Bids will be opened May 18 for a pump of 3,000,000 gal. daily capacity, remodeling of filter basins and reconstruction of station building.

The Louisville Car Wheel & Railway Supply Company, Louisville, Ky., has under construction adjoining its present plant a machine shop, 30 x 60 ft. It is understood that most of the necessary equipment has been purchased.

The Southern Railway Company, A. Stewart, general superintendent, motive power, Washington, D. C., will commence work at an early date on the proposed addition of a boiler shop and storeroom to its Spencer, N. C., shops.

## The North Pacific Coast.

TACOMA, WASH., April 22, 1910.

Inquiries for the general run of machinery and supplies are at present less liberal than they have been. Nevertheless the amount of money actually being expended is greater than ever before. This condition results from the relatively large number of important contracts, as compared with those of ordinary size, which are now being closed.

For the past six months one of the chief mainstays of foundries, boiler shops and machinery building plants on the north coast has been the lumber industry of Oregon, Washington and the Mountain States, as well as across the line in Canada. Never in the history of this section has there been so much building of new mills coupled with the enlargement of existing plants. Repair and alteration work alone has been a very large item. Improvements have also been generally made which not only increase the efficiency of the mills, but by reason of future maintenance have a tendency to broaden the entire market for equipment. Present indications are that the demand from this source will be considerably less urgent during the next 10 or 12 weeks, but there is enough work in sight to keep a good many shops busy indefinitely.

More attention is being paid this season than ever before to structural steel and bridge work, and fabricating plants in this section have taken a great deal of business which in past years would have gone to concerns of the East and Central West. The consequence has been a gradual increase of shop and erection facilities to meet the requirements of the trade, and this will continue in constantly increasing ratio. Eastern manufacturers of equipment for such shops, as well as for the work in the field, have strengthened their representation in the principal coast cities and others are reported to be making arrangements with some of the established agencies.

The Hoquiam Machine Works, Hoquiam, Wash., has had an especially strong line of inquiries lately, with some good orders, from various points in British Columbia, where there is great activity in mill building.

The Tenino Light, Power & Water Company, Tenino, Wash., which now has a power plant of about 200 kw., engine operated, is reported to be planning the construction of a large hydroelectric station in that vicinity. Preliminary work may begin next month.

The Brown Electric Company, Wenatchee, Wash., whose requirements were recently mentioned, has placed orders for the preliminary work on a hydroelectric plant of 3500 to 4000 kw.

The Twin City Light & Traction Company, Chehalis, Wash., which is now operating an electric plant of about 500 kw. capacity, will build a large power house and install steam turbine units.

The Columbia Bridge Company, Walla Walla, Wash., has been awarded a contract by the commissioners of Whitman County, Wash., for five new bridges.

A new boiler, engine and some operating machinery will be installed by the Columbia Box & Lumber Company, South Bend, Wash.

The Portland Brazing & Machine Works, Portland, Ore., will be operated in future, with enlarged facilities, as the Portland Brazing Machine & Coppersmith Works, having passed under the control of new interests.

The hydroelectric plant of the Montesano Light & Water Company, which is of small capacity, is reported sold to Seattle parties who will greatly enlarge the size of the development.

Among the busy shops of Portland, Ore., is that of the Northwest Blowpipe Company. An unusually large number of orders is now in hand.

It is announced from Spokane, Wash., that the Crow-Archer Brass Works are planning the erection there of a three story plant, 60 x 75 ft., which will be equipped throughout with the most modern types of motor driven machinery. The company's products include brass specialties of various kinds.

Interests identified with the Portland Oxy-Acetylene Welding Company, Portland, Ore., are planning to engage in the manufacture of gas engines of the two-cycle and four-cycle direct acting types; but no authorized statement in relation to this has as yet been made.

The Phoenix Iron Works, Portland, Ore., has in its shops, at the present time, a good deal of work for railroad companies of this section, whose maintenance departments show renewed activity.

The Columbia Block & Ram Company, Portland, Ore., has finished one of the buildings, 85 x 130 ft., which is to form part of its new plant at Linton, Ore. Another is under erection.

Joshua Oldham & Sons, Brooklyn, N. Y., whose business on the Coast is in charge of D. I. Salt, White-Henry Building, Seattle, Wash., have been obliged to increase their sales force in this territory in order to take care of inquiries.

The Marine Iron Works, Portland, Ore., has been executing a contract for the Government in repairs to the dredge Chinook.

The Portland Railway, Light & Power Company, Portland, Ore., has placed an order with the Allis-Chalmers Company, Milwaukee, Wis., for two 10 x 30 in. heavy duty Corliss engines to be direct connected to fans supplying furnace draft. The same company will also furnish two new exciter units, one a 75 kw. engine driven set and the other a 2300/120 volt motor generator set.

The authorities at Union, Ore., have engaged an engineer to prepare plans and specifications for a hydroelectric power plant and pumping station.

John Hanbury of the Hanbury Mfg. Company, Branden, Man., has under construction near Vancouver, B. C., a new mill which will be electrically operated throughout. Current is to be generated by a Parsons steam turbine of 750 hp., driving an alternating current dynamo at 3600 rev. per min.

A large hydroelectric power development will be undertaken by the Central Oregon Water Power Company, Portland, Ore., which has been incorporated by H. F. Chapin, A. G. Hill and N. B. Chapman. Offices have not yet been established, however, and bids on construction or equipment will not be received until announced later on.

The new plant which the Pacific Tank & Pipe Company has just put in service at Portland is electrically operated throughout. A part of the equipment, such as special machines for tank and pipe work, was built by the company itself, under its own patents.

The Spokane, Portland & Seattle Railroad is planning to spend \$25,000 for car repairing equipment at Vancouver, Wash.

The Ewart Rotary Valve Gas Engine Company has been organized at Seattle, Wash., where it will install a gas engine factory.

The Washington Water Power Company, Spokane, Wash., in reply to an inquiry concerning its proposed development of water power at Spokane, advises that it has not reached any conclusion in regard to the matter.

The Hallidie Machinery Company, Seattle, Wash., dealer in machine tools and general machinery, will erect in conjunction with the Polson Implement Company a new warehouse 120 x 134 ft. The building will cost about \$300,000 and will be erected by the Stone & Webster Engineering Corporation. The company will continue to occupy its quarters at Occidental avenue as heretofore.

## San Francisco.

SAN FRANCISCO, April 20, 1910.

Activity is below normal in most departments, the inquiry for mining and woodworking machinery being light in comparison with former years. Requirements of local iron and metalworking firms have been small, and the abandonment of the field by several large manufacturers the last year has left the market full of second-hand machine tools, which are offered at low prices. In car shop equipment, some business is expected from the Southern Pacific Railroad, which is about to install large shops in this city. The bulk of the machinery trade at the moment, however, originates in the oil fields, most of the oil well machinery being manufactured at Bakersfield, Coalinga or Los Angeles. The Union Tool Company has been a large buyer of machine tools, equipping shops at Coalinga, Fullerton and Moran.

Small pumping units find a steadily increasing demand, due to the development of large areas which must be irrigated. There is also an active movement of agricultural machinery of all descriptions. Few orders have been taken recently for large pumping or hydroelectric units, but a number of inquiries are coming up, and considerable activity is expected during the summer. Large installations of rock-crushing machinery last year have fairly supplied the demand, though some further development is projected for the coming summer, and some new inquiry is coming out for dredging equipment.

There is some talk of duplicating the hydroturbine plant of the Trinity River Mining Company in Trinity County. The present equipment consists of two 76-in. turbines, installed by the Joshua Hendy Iron Works.

Fairbanks, Morse & Co. have recently installed several alfalfa meal mills at Modesto, Cal., and there is a growing demand for these machines in the irrigated districts.

A fair demand is noted for cooperage machinery. The David Woerner Cooperage Company, this city, recently installed a direct connected turbine generator, with several independent motor-driven machines; the Humboldt Cooperage Company, Arcata, Cal., is adding to its plant and installing electric equipment; Herbert, Vogel & Mark, San Francisco, have put in a machine barrel plant; the Union Cooperage Company, recently organized at Aberdeen, Wash., is increasing its output, and the Western Cooperage Company, Portland, Ore., is planning a new stave mill, as well as a short railroad and logging equipment.

C. H. Jennings is installing a small machine shop for automobile work at Elma, Wash.

The Pacific Pulp, Paper & Products Company has purchased a site at Eureka, Cal., where it is proposed to establish a large paper mill.

A large steel lumber mill is being erected at Oroville, Cal., for the Truckee Lumber Company, the structural work being in charge of the Worden-Allen Company, Milwaukee.

A new unit, to cost about \$30,000, is to be added to the electric power plant of the Tracy Engineering Company, Kingman, Ariz.

It is reported that a steel pipe manufacturer of New Jersey is negotiating for a factory site near Irondale, Wash.

Hanscom & Kimball, Paradise, Cal., are planning to install a hydroelectric plant to generate 2000 hp.

J. A. Prentice, Eureka, Cal., is in the market for a gold dredger.

A large lot of flour mill and hydraulic machinery was recently shipped to Yokohama, via Tacoma. Manchurian interests have been large buyers of American agricultural implements, which are now being shipped.

The Pelton Water Wheel Company, San Francisco, is building two double Pelton-Francis turbines for a municipal plant at Eugene, Ore.

The Alaska Treadwell Gold Mining Company is preparing to install two water wheel units of 350 hp. capacity each at its mine near Juneau, Alaska.

The Johnnie Mining & Milling Company, Los Angeles, contemplates doubling the capacity of its ore mill and the installation of electric power equipment at its mines at Johnnie, Nev.

The Tecopa Mining Company, Rhyolite, Nev., is preparing to install a hydroelectric power plant.

The Comstock Lode Mining Company is preparing to install a large pumping equipment in its mine at Virginia City, Nev.

The Draper mine, near Tuolumne, Cal., will shortly install a five-stamp mill.

Plans are being completed for the further development of the Sierra & San Francisco Power Company's hydroelectric project near Sonora, Cal., controlled by the United Railroads interests.

The Barstow Utility Company has been incorporated at San Bernardino, Cal., with a capital stock of \$50,000, by W. W. Brison, Jr., W. M. Parker and C. L. Allison. The company will manufacture ice making, refrigerating and precooled machinery.

The Northern California Power Company has placed an order with the Allis-Chalmers Company for three new units, including water wheels and electric generators, with an aggregate capacity of about 20,000 hp.

The Pacific Jupiter Steel Company, manufacturer of machinery castings, is moving its offices from the Postal Telegraph Building to 501 Sheldon Building.

The Pullman Company's site at Richmond, Cal., will soon be ready for the installation of machinery. Much of the equipment will be brought from the company's shops at Denver.

Marine work is quiet in San Francisco, though there are a few fair jobs on hand. The United Engineering Works has just taken a contract for a ferry steamer for the Government, amounting to \$107,000, and the Bendixsen Shipyard at Eureka, Cal., has taken an order for a steam schooner. The Union Iron Works has a large repair job on the steamer Santa Rita. The Moore & Scott Iron Works is about to launch a new 200 ft. oil tank steamer, with a capacity of 7,000 barrels. It is equipped with two Scotch boilers for 160 lb. pressure, compound engines, oil burning equipment, and a complete outfit of oil pumping machinery.

The Natomas Consolidated of California is preparing to build three or four large reclamation dredgers to operate in the Sacramento Valley. This company installed a rock crusher with a capacity of 100 tons an hour at Fair Oaks last year, and a similar plant is being installed for the Valley Contracting Company, a subsidiary concern, near Oroville, Cal.

The Western Gold Dredging Company, recently organized at Oroville, Cal., will require a large steam shovel and dredging outfit.

The Frazer River Lumber Company, Ltd., of Frazer Mills, B. C., is having plans drawn for an electrically operated cedar mill and sash and door factory, and for a shingle mill to be erected at Anacortes, Wash.

The Dillingham interests of Honolulu have secured a sugar plantation in the Philippine Islands, where they propose to erect a mill.

The Riverside Portland Cement Company, Riverside, Cal., will install a new crushing plant, including one of the largest size gyratory breakers, elevator, screens, &c.

Eccles & Smith, San Francisco, who carry the filters of the Burt Mfg. Company, Akron, Ohio, in stock, have found a largely increased interest this season in that class of material, owing to the numerous power plant improvements now being made.

The crushing plant of the Los Angeles Stone Company, Los Angeles, Cal., will be considerably improved and its capacity increased.

The Reliance Engineering & Equipment Company is a new organization which is preparing to begin operations on the coast. Offices have not yet been established, but the company may be addressed in care of E. B. Strong, 604 Mission street, San Francisco.

The Mascot Copper Company, of which T. N. McCauley, First National Bank Building, San Francisco, is managing director, will build a 2000-ton smelter at Dos Cabezas, Ariz.

## Government Purchases.

WASHINGTON, D. C., April 25, 1910.

The Isthmian Canal Commission will open bids May 11 for locomotive cranes, inspection cars, wattmeters, and a large lot of machinery supplies, circular No. 577.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids May 10 under schedule 2431, for 12 electric radial drills, and under schedule 2433 for one gasoline engine.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids April 19 for the following:

Class 2.—One core making machine—Bidder 30, the Falls Rivet & Machinery Company, Cuyahoga, Ohio, \$415.85; 66, the Perrine Machinery Company, Seattle, Wash., \$450; 67, J. W. Paxon Company, Philadelphia, Pa., \$427.85; 88, Vermilye & Power, New York, \$427.85.

Class 3.—Four electrically driven sensitive bench drills—Bidder 22, Dunham, Carrigan & Hayden Company, San Francisco, Cal., \$97.50; 40, James P. Kemp, Baltimore, Md., \$94; 66, Perrine Machinery Company, Seattle, Wash., \$93.80 and \$81.64.

Class 7.—One metal saw cutting-off machine—Bidder 13, the Cochran-Blye Company, Rochester, N. Y., \$799.50; 31, George S. Fowler, Washington, D. C., \$780; 63, the Nutter & Barnes Company, Boston, Mass., \$799; 66, Perrine Machinery Company, Seattle, Wash., \$688 and \$699; 86, the Tindall, Morris Company, Eddystone, Pa., \$1130.

Class 8.—One improved valve reseating machine—Bidder 23, Dunham, Carrigan & Hayden Company, San Francisco, Cal., \$235; 26, Drew Machinery Agency, Manchester, N. H., \$235; 34, R. W. Geldart, New York, \$235; 47, Knox & Brother, New York, \$235; 54, Manning, Maxwell & Moore, New York, \$235; 57, Montgomery & Co., New York, \$235; 60, Manhattan Supply Company, New York, \$274; 66, Perrine Machinery Company, Seattle, Wash., \$235; 76, R. B. Sherman, New York, \$235; 88, Vermilye & Power, New York, \$235.

Class 51.—One engine lathe—Bidder 32, Fairbanks Company, Washington, D. C., \$926 and \$826; 54, Manning, Maxwell & Moore, New York, \$1063.

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## Watch Next Week's Issue

Our readers can hardly have failed to notice certain typographical improvements which have gradually been made in the advertising pages of THE IRON AGE during the last four months.

Since the end of 1909 the heterogeneous collection of cards formerly occupying the front cover have given way to a single dignified announcement, changed every week.

On the inside pages the old three-column measure, with its irregular and crowded appearance, is being replaced as rapidly as possible by advertisements set in two columns, and in even fractions of a page.

Beginning with the issue of May 5th two other noteworthy changes will be inaugurated:

1. A re-arrangement of the reading pages. The why and the how of this new grouping are outlined editorially on page 998 of the present issue.
2. A new classification of the advertising pages. Broadly speaking, most of the advertisements in THE IRON AGE may be divided into two great groups:
  - (a) The Materials of manufacture.
  - (b) The Machinery of manufacture.

The attempt will be made, not only to divide the advertisements into these two groups—one following and the other preceding reading matter—but to classify the advertisements in each group in the most logical manner.

The readers of THE IRON AGE are busy men. Anything that will add to their convenience when reading the paper, or when consulting its advertising pages, is a step in the right direction. Hence these changes.

For any who may fear that such refinements in *form*, made or contemplated, will in any way weaken the sturdy *substance* of THE IRON AGE, we venture to quote the words used by James Russell Lowell when reminding his readers that "elegance also is force":

"After polishing granite as much as you will  
The heart keeps its tough old persistency still."

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL— Bar Iron from store—

Refined Iron:	
1 to 1 1/4 in. round and square.....	per lb 1.90c
1 1/4 to 4 in. x 3/4 to 1 in.....	per lb 2.10c
1 1/2 to 4 in. x 1/2 to 5-16.....	per lb 2.10c
Rods—3/4 and 1-16 round and square.....	per lb 2.10c
Angles:	
3 in. x 3/4 in. and larger.....	per lb 2.10c
3 in. x 3-16 in. and 1/2 in.....	per lb 2.35c
1 1/2 to 2 1/2 in. x 1/2 in.....	per lb 2.20c
1 1/2 to 3 1/2 in. x 3-16 in. and thicker.....	per lb 2.10c
1 to 1 1/4 in. x 3-16 in.....	per lb 2.30c
1 to 1 1/4 x 1/2 in.....	per lb 2.30c
3/4 x 1/2 in.....	per lb 2.40c
3/4 x 1/2 in.....	per lb 2.50c
5/8 x 1/2 in.....	per lb 3.55c
1/2 x 3-16 in.....	per lb 4.85c
Tees:	
1 in.....	per lb 2.65c
1 1/4 in.....	per lb 2.45c
1 1/2 to 2 1/2 x 3/4 in.....	per lb 2.15c
1 1/2 to 2 1/2 x 3-16 in.....	per lb 2.35c
3 in. and larger.....	per lb 2.15c
Beams.....	per lb 2.10c
Channels, 3 in. and larger.....	per lb 2.10c
Bands—1 1/2 to 6 x 3-16 to No. 8.....	per lb 2.35c
"Burden's Best" Iron, base price.....	per lb 3.15c
Burden's "H. B. & S." Iron, base price.....	per lb 2.85c
Norway Bars.....	per lb 3.60c

## Merchant Steel from Store—

Bessemer Machinery.....	per lb 1.90c
Toe Chalk, Tire and Sleigh Shoe.....	per lb 2.50c-3.00c
Best Cast Steel, base price in small lots.....	per lb 7c

## Sheets from Store—

Black	One Pass, C.R.	R. G.
	Soft Steel.	Cleaned.
No. 16.....	per lb 2.90c	per lb 3.10c
Nos. 18 to 21.....	per lb 2.95c	per lb 3.10c
No. 22 and 24.....	per lb 3.05c	per lb 3.20c
No. 26.....	per lb 3.10c	per lb 3.30c
No. 28.....	per lb 3.20c	per lb 3.50c

## Russia, Planished, &c.

Genuine Russia, according to assort- ment.....	per lb 12 @ 14 1/2
Patent Planished, W. Dewees Wood.....	per lb 10c; B, 9c net

## Galvanized.

Nos. 14 to 16.....	per lb 3.30c
Nos. 22 to 24.....	per lb 3.55c
No. 26.....	per lb 3.75c
No. 28.....	per lb 4.10c

## Genuine Iron Sheets— Galvanized.

Nos. 22 and 24.....	per lb 5.75c
No. 26.....	per lb 6.25c
No. 28.....	per lb 7.25c

## Corrugated Roofing—

2 1/2 in. corrugated.	Painted	Galvd.
No. 24.....	per 100 sq. ft. \$3.85	4.50
No. 26.....	per 100 sq. ft. 2.50	4.00
No. 28.....	per 100 sq. ft. 2.00	3.75

## Tin Plates—

American Charcoal Plates (per box.)	
"A.A.A." Charcoal:	
IC, 14 x 20.....	per box \$6.35
IX, 14 x 20.....	per box 7.00

A. Charcoal:	
IC, 14 x 20.....	per box \$5.40
IX, 14 x 20.....	per box 6.50

American Coke Plates—Bessemer—	
IC, 14 x 20.....	per box \$4.40
IX, 14 x 20.....	per box 5.40

American Terne Plates—	
IC, 20 x 28 with an 8 lb. coating.....	per box \$8.50
IX, 20 x 28 with an 8 lb. coating.....	per box 10.50

## Bolts—

Carriage, Machine, &c.—	
Common Carriage (cut thread):	
3/4 x 6 and smaller.....	per lb 70c-75c
Larger and longer.....	per lb 65c-75c

Common Carriage (rolled thread):	
3/4 x 6, smaller and shorter.....	per lb 70c-75c
Phila. Eagle, \$3.00 list.....	per lb 80c-85c
Bolt ends with C. & T. Nuts.....	per lb 65c-75c

Machine (Cut Thread):	
3/4 x 4 and smaller.....	per lb 70c-75c
Larger and longer.....	per lb 65c-75c

## Nuts

Blank or Tapped.	
Cold Punched:	per lb Off list.
Square.....	per lb 4.90c
Hexagon.....	per lb 5.50c

Square, C. T. & R.....	per lb 5.30c
Hexagon, C. T. & R.....	per lb 6.10c
Hot Pressed:	per lb Off list.
Square.....	per lb 5.40c
Hexagon.....	per lb 5.80c

## Seamless Brass Tubes—

List November 13, 1908.....	Base price 18c
Brass Tubes, Iron Pipe Sizes—	
List November 13, 1908.....	Base price 15c

## Copper Tubes—

List November 13, 1908.....	Base price 22c
Brazed Brass Tubes—	
List August 1, 1908.....	per lb 19 1/2c

List August 1, 1908.....	per lb 14 1/2c
High Brass Rods—	
List August 1, 1908.....	per lb 14 1/2c

List August 1, 1908.....	per lb 14 1/2c
Roll and Sheet Brass—	
List August 1, 1908.....	per lb 14 1/2c

List August 1, 1908.....	per lb 14 1/2c
Brass Wire—	
List August 1, 1908.....	per lb 14 1/2c

Base Price.....	Carload lots mill 14 1/2c
Copper Wire—	
Base Price.....	Carload lots mill 14 1/2c

## Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) 7 lb 19 c	
Sheet Copper Cold Rolled, 1c advance over Hot Rolled.....	
Sheet Copper Polished 20 in. wide and under, 1c square foot	
Sheet Copper Polished over 20 in. wide, 2c square foot	
Planished Copper, 1c square foot more than Polished.	

## METALS—

### Tin—

Straits Pig.....	per lb 34 1/2c-35c
Copper—	
Lake Ingot.....	per lb 14 1/2c-15 c
Electrolytic.....	per lb 14 1/2c-15 c
Casting.....	per lb 14 1/2c-14 5/8c

### Spelter—

Western.....	per lb 6 1/2c-6 3/4c
Zinc	
No. 5, base, casks.....	per lb 8 1/2c-8 3/4c

### Lead.

American 1 1/2.....	per lb 5 1/2c-5 3/4c
Bar.....	per lb 5 1/2c-5 3/4c

### Solder.

1 1/2 & 1/4, guaranteed.....	per lb 22 1/2c-23 1/2c
No. 1.....	per lb 17 1/2c-18 1/2c
Rehmed.....	per lb 17 1/2c-17 3/4c

Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson.....	per lb 10c-11c
Halletts.....	per lb 10c-11c
Other Brands.....	per lb 10c-11c

### Bismuth—

Per lb.....	\$2.00-2.25
Aluminum—	
No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting.....	per lb 24c

Rods & Wire.....	Base Price 31c
Sheets.....	Base Price 33c

### Old Metals.

Dealers' Purchasing Prices Paid in New York	
Copper, Heavy cut and crucible.....	per lb 11.00-11.25
Copper, Heavy and Wire.....	per lb 10.75-11.00
Copper, Light and Bottoms.....	per lb 10.50-10.75
Brass, Heavy.....	per lb 7.25-7.50
Brass, Light.....	per lb 6.00-6.25
Heavy Machine Composition.....	per lb 10.00-10.25
Clean Brass Turnings.....	per lb 7.00-7.25
Composition Turnings.....	per lb 6.50-6.75
Lead, Heavy.....	per lb 6.50-6.75
Lead, Tea.....	per lb 6.25-6.50
Zinc Scrap.....	per lb 5.75

## THE IRON AGE

Established 1855

The oldest paper in the world devoted to the interests of the Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

Issued Every Thursday Morning

**Subscription** \$5.00 a year to the United States, Mexico, Hawaii, Cuba, Philippine Islands.  
**Postpaid**

Canada, \$7.50 a year. Foreign Countries, \$10.00 a year.

## IRON AGE HARDWARE

A business builder for retailers, jobbers and manufacturers of hardware, housefurnishings and sporting goods.

Issued Every Saturday Morning

**Subscription** \$2.00 a year to the United States, Mexico, Hawaii, Cuba, Philippine Islands.  
**Postpaid**

Canada, \$3.00 a year. Foreign Countries, \$5.00 a year.

THE IRON AGE and IRON AGE-HARDWARE to one address, United States and Mexico, \$6.00 a year; Canada, \$9.50; Foreign, \$14.00

Remittances should be made by draft, payable to the order of David Williams Company on any banking house in the United States or Europe, or by Post Office, Bank or Express Money Order on New York. When those cannot be obtained, postage stamps of any country will be received.

Newspaper or Booksellers in any part of the world may obtain The Iron Age and Iron Age-Hardware through the American News Company, New York, U.S.A.; The International News Company, New York, U.S.A., and London, England; or the San Francisco News Company, San Francisco, Cal., U.S.A.

Entered at the Post Office, New York, as Second-Class Matter.

### BRANCH OFFICES

New York (Main Office).....	14-16 Park Place
Philadelphia.....	Real Estate Trust Co. Building, Broad and Chestnut Streets
Pittsburgh.....	Park Building, 357 Fifth Avenue
Chicago.....	Fisher Building, Dearborn and Van Buren Streets
Cincinnati.....	Pickering Building, Fifth and Main Streets
Boston.....	Compton Building, 161 Devonshire Street
Cleveland.....	The Cuyahoga, 216 Superior Avenue, N. E.

PUBLICATION OFFICE, 14-16 PARK PLACE, NEW YORK